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Some Conditions met with in Racing Greyhounds.*

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General Management.—I do not propose to go deeply into the general management question, but merely deal with one or two of the principal factors whereby greyhounds at a track are kept fit. When I say fit I do not mean that they are trained to the top of their form (that, as far as track racing is concerned, would be useless), but kept in such a condition of fitness that consistent running is obtained for a maximum period. Regular feeding, good food—and by that I mean a well-balanced ration and in sufficient quantity—regular exercise, and general attention to hygiene, such as grooming, etc., dry and airy kennel accommodation are the essentials.

As regards feeding, a brief description of the diet at the track will show that it is a fairly well-balanced one :—

Morning Feed.—1-lb. brown bread, ¾-pint new milk.

Evening.—½-lb. raw meat (minced at the cook-house), 1 lb. brown bread, 1 teaspoonful cod-liver oil—mixed with broth made from sheep-heads (leeks, onions, etc., in season).

I will not say that this is the best diet to keep dogs' teeth in the best of condition, but so far the only trouble we have had is a deposition of tartar, which is from time to time removed. No cases of really badly diseased teeth have been encountered. This might certainly be explained by the fact that dogs never really attain old age. Greyhounds, as far as their running is concerned, are fairly consistent, but inconsistency is by no means uncommon. Some causes are apparent, such as their temperament under the various conditions of racing, and may account for their behaviour. Irregularities in diet, as in other animals, play a certain part and although these irregularities may be slight and possibly not patent, a change to a lighter diet for a day or two works wonders. At the beginning dog biscuits were used instead of bread, but during an exceptionally bad outbreak of hysteria they were discontinued. This outbreak was so bad that although we still had a sufficient number of dogs to make up races, we were very worried; in fact, twice dogs had an attack during a race (one dog won very easily). Luminal and morphia, etc., were given to the affected dogs. Curiously enough, at a sister track in England run on exactly the same lines, they were forced to close down. We stopped the biscuits and the trouble died down. The track in England followed suit and I think I am safe in saying that we have had no cases since. How do the biscuits contribute to the trouble? (We have had several cases recently in practice where in each case the dogs had been fed for periods of a week on *one brand* of biscuits.) This, of course, does not lead one to the conclusion that biscuits alone are to blame, because cases occur where no biscuits have been given, but it is of sufficient interest to note. One of the conditions which follow irregularities in diet, but which cannot be explained, is urticaria—sometimes sufficiently severe when involving the head to cause some distress in breathing. It generally passes off quietly, but is occasionally complicated with stomach trouble which persists for a day or two. Worming out of dogs is occasionally followed by urticaria.

It is only with constant attention to many minor details of management that greyhounds are kept reasonably fit, and some of the pernicious habits which the dogs develop, probably as a result of so much idleness, are very worrying to those whose duty it is to look after them.

Probably the commonest cause of their "falling off" is eating fæces; many dogs have this habit and require constant watching, as well as a good muzzle. A wire-meshed floor to the kennel might help, but there would always be a risk of injury to the paws.

Masturbation is another common habit and it is surprising the means adopted by the dogs to continue this practice as one method after another is checkmated. Muzzling, of course, is adopted, with a course of pot. iodide. This helps in many cases, but confirmed cases often damage the sheath and penis thrugh attempting the practice through the muzzle or even the wire netting of the kennels. Castration would probably be the best method of causing a cessation of this troublesome practice.

Greyhound Ailments.—The greatest worry of all is, of course, the fear of introducing any disease of an infectious nature; which, if it obtained a hold in a kennel with so many dogs, would seriously inconvenience the racing. General preventive measures against introducing infection into the kennels are adopted for this reason. These are (1) all newcomers to the track are isolated in a block of kennels outside of the track for at least 14 days; (2) isolation at once of any case which might be of an infectious nature; (3) elimination, as far as is practically possible with the regular staff, of all intercommunication with the other dogs. So far as our experience has gone we have been very fortunate in only having had very minor outbreaks of trouble. The chief fear is of distemper; also a type of infectious cough which, although apparently not serious in itself as far as endangering the life of the dog is concerned, prevents it from racing.

GREYHOUND ENTERITIS, especially in dogs imported from Ireland, seems to warrant care, but so far we must again have been lucky. We have not had the distressing mortality recorded by others nor has it been necessary, in the cases we have had, to resort to very drastic methods of treatment. Milk diet at once and mild sedative mixtures, or more often iodine tablets, are the usual means employed to assist recovery. The duration of the attack

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varies from two days to a fortnight and it may occur intermittently for six weeks with rise and fall of temperature. The period of convalescence varies; usually a fortnight is required on a normal diet.

The quantities of blood voided are often considerable; there is a distinctive odour from the dog's mouth, and the mucous membranes become very anæmic.

Occasional cases of dysentery, which might be mistaken for infectious enteritis, are caused by chewing the wooden structure in the kennel or eating bedding. Generally the evidence of wood-eating is apparent.

Cramp.—What is the condition and how is it caused? How can we be sure that the condition has definitely gone? These are the questions one asks oneself.

This condition is one of the greatest worries in greyhound practice; therefore perhaps a short résumé of what happens may not be out of place.

The animal, apparently fit, sets off and at varying distances usually emits a sharp cry of pain, slows down and finishes tailing off in varying degrees of lameness and distress. It may be a foreleg but it is generally both hind legs which are affected. On examination immediately afterwards, the muscles generally of the loins are tense and pressure is evidently painful. On the forelegs the triceps group are affected. Occasionally the extensors of the hock in the hind limbs would appear to be affected similarly. With complete rest and gentle massage for a few days the animal becomes apparently all right; there is nothing to be seen or felt. A fortnight's rest is given in the first instance.

Two trials are then given and these may be quite satisfactory; if so, the animal is put in a race. There may be no recurrence, but it often happens that the same condition is shown. Of course, a number of cases show up in the trials, but the worrying part is that many do not. It is almost impossible to give a prognosis. Rests up to four months have been given and still there has been a recurrence of the symptoms and eventually an apparently useful animal has to be cast.

It might be accounted for in bitches which are coming into œstrum, as being due to an upset in metabolism productive of tetany of the muscles; but in dogs there is no apparent upset. Local circulatory disturbance due to emboli might be the cause. There may, of course, be some permanent damage done to the part from some cause, even an error in diet. An analogy might be drawn with azoturia. Whatever it may be, it would be of interest to know, if it were only to enable one to make a reasonably accurate prognosis.

"Track Muscles" (so-called).—This is a condition the symptoms of which are a swelling on the medial aspect of the tibia about two inches above the hock. Generally soft and apparently fluctuating at first, it ultimately becomes smaller and callous; almost, in fact, like a bony exostosis. It would appear to be caused by excessive strain, especially in dogs which have just passed the "green stage." Having a suspicion that it might be in the nature of a hæmatoma, one or two were pierced with a fine trocar and canula, but the quantity of fluid expressed was negligible and recovery was not hastened and, apart from the possibility of introducing infection, this line of treatment seems of little additional value. The possibility of there being a periostitis somewhat similar to "splints" in horses was also considered. The opportunity of making a *post-mortem* did not present itself until recently and only one has been made so far. However, it was a well-defined one and the findings were that the condition was one of sprain of the thin tendinous slip of the Gracilis and Semitendinosis muscles which attaches to the medial aspect of the tibia (the other small tendon runs to the medial head of the tibia). The consequent inflammation with the formation of small blood vessels accounts for the swelling. The dogs are occasionally, but not always, lame; this may be accounted for by the fact that the tendon is so small and probably does not enter greatly into the muscular co-ordination.

Rest and daily painting of the swelling with Tr. iodine for a few days at the start and the swelling being allowed to become callous before the animal is raced again, are all that is necessary. Persistence in running a dog in the early stages only leads to a greater swelling and ultimate interference with the animal's gait.

"Sprung Muscles."—This is really a condition of strain or sprain of muscle. The seat of injury is generally the triceps but, of course, the condition may occur in any muscle or group of muscles. The dogs are generally lame and the part swollen and painful. A period of rest with application of antiphlogistine and followed by Tr. iodine is generally all that is required. The period of rest varies from 14 days to a month and even longer, but there is a tendency for this condition to recur under racing conditions.

Dislocation of the Shoulder.—This is sufficiently common to be worthy of mention. Owing to the nature of the bends to be negotiated, it is nearly always the right shoulder which is affected; the dislocation is always outwards. Reduction is generally easy if done immediately afterwards. The animal is given a period of rest. There is always a liability for this to recur.

Arthritis of the Carpus.—This is a very common condition and the animals never seem fully to recover. Periods of a fortnight's rest between each race enable these animals to come out sound, but they are generally lame for a day of two afterwards. Probably it develops into a rheumatic condition.

Injuries to the Toes are the most common conditions met with. Broken and split claws of varying degree, dislocation of the first or fracture of the second or third digit are the general rule. Occasionally there is only an inflammatory condition at the junction of the nail at the coronary band and with ordinary antiseptic treatment the nail is preserved. If at all badly damaged, healing takes place much more rapidly if the nail is removed.

Fractures of the Digits.—These fractures may be through the body of the bone or merely a spicule split off from the end involving the joint surfaces. In several cases healing has been retarded, due to a small sequestrum of bone, and on its removal healing progressed uneventfully. Digital fractures frequently set, if the paw is completely bandaged and kept at rest for ten days or so but if, as often happens, no union takes place, amputation of the digit has then to be resorted to.

At the outset of our experience, we operated by the ordinary flap method, losing the small digital pad in so

doing. The resulting lameness from this method is troublesome, so it was decided to adopt some method whereby the pad would be left intact. Results of a similar method have recently been recorded. The operation is done under local anæsthesia. An incision is made on the dorsal surface and the bone is virtually filleted out, leaving the pad in position. The wound is sutured and painted over with flexile collodion. The sutures are removed in four or five days and healing is usually uneventful. The animal is generally fit to race in about a month. There is, however, generally a halt while walking, but as time goes on this disappears. Apart from the fact that the animal is never quite so fast again, it is nevertheless a useful animal except on hard or frosty " going."

" Stubbed " or Hammer Toes.—This condition may or may not arise from fracture at the junction of the first and second digits, but at least there is ankylosis of and exostosis around this digital joint, the appearance of the toe giving the condition its name. Treatment appears to be of little practical value in this condition.

Splits between the toes are very common on hard and frosty " going " and are extremely troublesome. The two wound surfaces are difficult to unite, due to the edges of the wounds becoming callous, and do not stand up to much strain even when united.

Stoppers.—The small pads below the carpus are frequently torn during frosty weather but are of little importance unless the wound becomes infected, and the injury does not usually interfere with the animal's usefulness.

Damage to the end of the tail is a common and troublesome condition and it very often requires a great deal of patience and ingenuity to overcome the recurrence of the trouble after healing has progressed to a stage where the part is almost callous again. Tail guards of metal are used but these are troublesome and bandaging alone is of little use. Padding the kennel is the best method of preventing the damage. Necrosis of the bone occurs and amputation well above the diseased area has to be carried out. It is a difficult matter to get a good flap to stitch, owing to the close adherence of the skin to the underlying tissues.

Fractures in greyhound racing are not, as might be supposed, very common (apart from fractures of the digits). They do occur occasionally as a result of accidents—hurdling—and fractures of the hock have occurred once or twice during a race from muscular effort or concussion. One case of interest occurred during a hurdle race where two dogs collided in the air. One died almost immediately from internal hæmorrhage from rupture of the liver; the other sustained a partial dislocation of the first and second cervical vertebræ and fracture of the wing of the atlas. Interference in this case was very limited. It is thought that we managed to reduce the dislocation. A dose of morphia (gr. 1) was given and the neck swathed in cotton wool and bandaged lightly. Improvement was gradual but it was remarkable how quickly the pain and stiffness disappeared. In two months the animal was racing and continues to race on the " flat " and very little can be seen or felt at the seat of injury.

Fractures of the tail occur as a result of either striking the tail on the bench on jumping down, or having the tail jammed in a door. Bandaging of the tail completely and then binding with adhesive tape (provided there are no wounds) for three weeks generally brings about union. If the fracture is near the tip, amputation is probably the quickest method of ensuring recovery.

Ordinary savaging injuries occasionally occur between dogs in kennels and at walk and are similar to those met with in general practice.

One animal, which died immediately after a race, was found on *post-mortem* to have sustained a rupture of the abdominal aorta; the abdominal cavity was full of blood.

One case stands out which emphasises the extraordinary powers of nature for repair. This animal had six or seven wounds over the triceps, a large gash in the axilla of the same leg and a three-inch wound on the back. The wounds defied stitching and ordinary antiseptic treatment was adopted. The whole of the skin over the triceps necrosed and had to be removed in pieces, leaving a six-inch square area denuded of skin; parts of muscle had to be removed. The leg was very badly swollen and the animal was dangerously ill in consequence of the absorption of septic material. When all the debris had been removed, healing took a matter of two months. Another month of gentle exercise and he was fit to race, and he has been racing in " sprints " ever since. Apart from an L-shaped scar due to the manner in which the wound healed, there is little evidence of the nature of the wound. The other wounds healed uneventfully.

We have purposely omitted " doping " because of our want of experience.

Discussion.

Mr. A. H. F. Robb, who opened the discussion, said: I would like to congratulate Professor Weir on his paper, to which I am sure we have all listened with great interest. Many of the conditions dealt with are peculiar to track-racing dogs, and, as track racing has undoubtedly come to stay, these conditions are becoming of more and more importance daily.

I am pleased that Professor Weir opened his paper with a résumé of the greyhounds' diet, as this is a point on which I am constantly having trouble both with owners and trainers. What I object to is the constant feeding of sloppy food: all the water a dog gets is given mixed with his food, and this has to be taken by all dogs, whether they require it or not to get the requisite amount of nourishment. I have known dogs going for months on end and never tasting fresh water, except for the mouthful that they get after a race, which is as a rule, once a week. I would like to know if Professor Weir does not think that many of the bowel troubles, diarrhœa, etc., are attributable to this cause.

Regarding the question of cramp; I regret that I am no farther forward than Professor Weir; I have tried many things, but without success. Rest seems to be the only thing that has any beneficial effect. I am, however, more inclined to blame the abdominal muscles than the muscles of the legs.

" Track leg " seems to me to be, in most cases, entirely hæmatomatous, and unless it is one of the few that cause lameness, I permit the dog to race on, and there seems to be no appreciable alteration in the running. I recently examined a stud of 35 greyhounds, and found that ten had track legs; I do not think that this is an abnormal percentage amongst dogs that have been racing for any length of time. This condition shows the great strain that is put on the near hind leg when the dog is negotiating left hand bends, as it is always this leg that is affected.

Toes, of course, are always a worry, and I agree with Professor Weir that amputation by the filleting method is best. A point that may be of interest is that while this method is successful with greyhounds, it is a failure with foxhounds; the pad has to be removed or the hound will not remain sound during a day's hunting.

In the case of Irish dogs, these have always been blamed for bringing all the infectious conditions into the racing kennels. I am very doubtful of this. I have tried, and in fact still adopt, the 14 days' isolation. Rarely does one go off colour during this period. Within the first few weeks, however, after they are introduced to the racing kennels, many show elevated temperatures, diarrhœa, etc., and I feel sure that our own kennels are to blame and not the green Irish dogs, which have probably come off country walks and have little or no immunity.

There are just two other questions I would like to ask, on subjects that were not mentioned in the paper. Firstly, what has been Professor Weir's experience with castration in the case of fighting dogs, and how long does he think they require to be rested after operating?

Secondly, what is his experience with those cases of digital eczema one meets so frequently, affecting the pads of dogs?

In conclusion, I would again like to thank Professor Weir for his most excellent paper.

Professor W. Robb said that all veterinary surgeons having to do with racing greyhounds seemed to encounter the same problems. One of the common and very puzzling ones was cramp. He wondered if cramp was not of the nature of a tetany: at any rate he would like to try the effect of glucose.

New dogs were always a source of worry, and isolation was not the end of the trouble. All tracks were teeming with catarrhal organisms, and his experience was that infection was not brought in by new young dogs, but transmitted to them after their arrival.

The so-called "track muscle" was a serum-effusion. Iodine might be injected, but the swelling recurred. The condition might safely be left alone, and eventually fibrosis would take place.

Major J. G. McGregor found it something of a novelty to intervene in a discussion of this subject, since he had never been on a greyhound racing track in his life. Listening to Professor Weir and Mr. Robb, junr., talking about fractures of the phalanges, he wondered how diagnosis of these fractures was made so accurately. Was the Röntgen rays method employed?

In the matter of feeding, he would like to know how the ration of these dogs was balanced. It seemed to him to be pre-eminently a case where a scientifically balanced ration should be worked out. He was surprised that the proportion of meat to bread was so small, and thought it might with advantage be increased, applying to the greyhound the words of the old song "A little of what you fancy does you good."

He wished to give a special welcome to the opener of their discussion, young Mr. Robb, and to compliment him on the able contribution he had made. A new generation was at the door, and he was sure they would be received with warmth and goodwill.

Mr. A. Thomson said his experiences corresponded with those of Professor Weir. He would be glad if someone could find out the cause of cramp.

Principal A. W. Whitehouse expressed thanks to the essayist for his stimulating paper. His own experience of track greyhounds was confined to the dissecting room. One thing that had struck him was that intestinal parasites were rarely found.

In regard to diet, if the proportion of farinaceous food was excessive, he would expect the abdominal viscera to be larger than they actually were.

He had found, in the United States, that if greyhounds had even a small part of the tail amputated they became almost useless as killers.

Mr. J. Macfarlane asked if in cramp a dog went off his food.

He would expect that young dogs coming to the kennels would contract infectious diseases, just as young horses did when brought into city stables.

The Reply.

Professor Weir, replying to the discussion, thanked Mr. Robb for opening it, and continued: many different diets were tried—proprietary foods, wheaten biscuits, etc.—and much expert advice sought before we arrived at our present diet. We have found that our dogs do well on it; although if a dog is to be made specially fit he might get a little extra flesh meat.

We would not like to say that dog biscuits caused hysteria, but from an outbreak which occurred in our private practice not long ago we are inclined to believe that the diet has much to do with the disease. A merchant in our district introduced a dog biscuit which was very cheap and was well liked by dogs. We got some for our own kennels. After we had been using them for about a week we had several cases of hysteria. In a few isolated cases, which occurred about the same time, the feed was found to be this same biscuit. At that time we were called to an outbreak in a training kennel and found there between 20 and 30 dogs all in different degrees of hysteria, and on looking round noticed a large receptacle containing this same biscuit. The dogs had been fed on this for a week only, and previous to that on different feeding.

The sloppy nature of our feeding seems to agree well with racing dogs, and does not cause diarrhœa. We had an epidemic of diarrhœa once, bordering on dysentery, which, on investigation, was found to have been caused by mouldy bread: at least it cleared up on the change to fresher bread.

We have castrated a number of dogs to find if this would stop them fighting, but the majority showed no improvement. Two of them have never fought since they were done, a year ago.

As regards cramp, the name is given for want of a better. Two years ago we had a regular epidemic. Just after the close season about 20 dogs were affected and many of them became useless, although we rested them for various periods. Two very fine bitches were rested for six months and came back and won many good races, with no return of the disease.

There is no doubt that for coursing the loss of a part of the tail interferes with the animal's ability to turn and twist, but in track racing this is not so noticeable.

The Abandoned Boarder.

The circumstances disclosed when Mr. E. P. Offord, M.R.C.V.S., of Hadley Green, applied to the Barnet magistrates recently for sanction to destroy a dog which had been left in his care represent a difficulty with which practitioners are all-too-frequently faced.

Mr. Offord said the dog was left in his care in March, and he was now quite unable to trace the owner. The cost of keeping the dog was steadily increasing. The owner now owed him about £30, and the dog was hardly worth thirty pence. Mr. Offord said he did not feel justified in "putting the dog to sleep" on his own initiative, in case the owner came along later and claimed damages.

The Clerk pointed out that, whatever claim the owner might have, if the dog were destroyed Mr. Offord would have a very substantial set-off by way of maintenance fees for the dog.

The Chairman said the Magistrates had no power to grant the application. He suggested that Mr. Offord might take County Court proceedings against the owner to recover the cost of keeping the dog.

Alleged Cruelty in Filming Animals.

At a conference organised by the Performing and Captive Animals' Defence League held at the Caxton Hall, Westminster, to discuss the alleged cruelty inflicted on animals in the production of cinematograph films, a resolution was carried that "immediate steps should be taken to foment public opinion on the matter of cruelty on the screen, and that an interview with the Film Censor and his Board should be arranged with a view to preventing any exhibition of cruel films."

Bovine Tuberculosis and Tuberculous Infection of Milk.*

Arthur Gofton, F.R.C.V.S.

In view of the prominence which has been given in the daily press during the past year to the question of bovine tuberculosis and the danger of human infection through the agency of milk, I feel no apology is necessary for choosing the same subject as my predecessor as the basis for my presidential remarks.

In a foreword to a memorandum issued by the Ministry of Health under the title "Bovine Tuberculosis with Special Reference to Infection by Milk," Sir George Newman states that the memorandum contains "a conspectus of information designed to enable the reader to appreciate the needs of the situation and the difficulties of meeting it which are by no means free from practical and scientific involvements." I wish to refer to some of these difficulties, because it is only by the recognition of difficulties and by the examination of them that progress will be made towards their solution. At the same time, I should like to make it clear that I have nothing new to disclose and nothing that I may say justifies either alarm or increase of fear where such already exists. The position to-day is certainly no worse than it has been at any time in the past. On the contrary, more safeguards are operating in the interests of the consumer than ever before.

Certain forms of human tuberculosis are recognised as being predominantly due to the action of the bovine bacillus. That cows' milk constitutes the main source of infection is an almost undisputed axiom. During the past ten years official statistics show a remarkable reduction in the incidence of those types of human tuberculosis recognised as being of bovine origin. Nevertheless, at the recent Congress of the National Association for the Prevention of Tuberculosis, Dr. Letitia Fairfield, Divisional Medical Officer, London County Council, submitted a paper in which she alleged that there was a distinct increase in the amount of tuberculous milk placed on the market, and that the risk of tuberculous infection through the agency of milk was, in fact, an increasing quantity. It is difficult to reconcile this statement with the indisputable fact of reduced incidence of the particular types of tuberculosis concerned. We cannot have it both ways. Either we are wrong when we allege that cows' milk constitutes the main source of infection, or we must admit that milk as it reaches the consumer, or at least the susceptible consumer, is safer to-day than it has been in the past, so far as the risk of tuberculous infection is concerned. I believe the latter to be the case, and that it has been one factor contributing to the reduced incidence. Whether this be due to more universal and more efficient treatment of milk before distribution, to factors which have been brought into operation on the farms, or to a combination of these and other influences, I do not propose to discuss. Let it suffice to say that we would fail in our duty if we did not recognise that we have still a long road to travel before we can express satisfaction with the results achieved.

We are accustomed to hear pasteurisation extolled as a cure for all the ills which pertain to milk. If it be true that pasteurisation will destroy the germs of tuberculosis or of any other disease which may be present in milk, it is at least equally true that milk which is destined for pasteurisation, if the best interests of the consumer are to be considered, should be clean, should be derived from healthy animals, and should be free from the germs of disease. Moreover, we are still waiting for the real truth as to the influence of pasteurisation on the nutritional value of milk. There is more involved than the addition of fruit juice to compensate for loss of the anti-scorbutic vitamin C. The progress of bio-chemistry has shown that heat effects change in many of the other constituents of milk, and we are without precise knowledge as to whether these changes are of material or of negligible significance on the nutritional value of milk to the human consumer. This is of importance in relation to tuberculosis. Tuberculosis is not primarily a deficiency disease, but it will not be denied that nutritional deficiency prepares the soil for the reception of infection. Further, it will be admitted that deficiency in certain mineral and other food constituents is most insidious in its effects. Unless the deficiency is gross, evidence thereof is very slowly manifested and the symptoms are not sufficiently pronounced to be easily recognisable clinically for what they are. But the damage is, nevertheless, being done, resistance is lowered, and the receptivity of the victim to different types of infection is increased.

It is of perhaps greater importance to ascertain whether pasteurisation as commercially practised is, in fact, effective in destroying the tubercle bacillus in milk. Flash pasteurisation may be dismissed as admittedly inefficient. So far as one can judge by the published statements of most authorities on the subject, pasteurisation by the holder process is regarded as 100 per cent. efficient. Unfortunately, it is not. Under controlled laboratory conditions the equivalent process can be relied on to render the tubercle bacillus inert, but laboratory conditions are not properly comparable with the commercial processes of milk treatment and distribution. The Milk (Special Designations) Order merely requires that "the type of apparatus used and the methods employed shall be such as are satisfactory to the local authority." It is not necessary for the relationship between time and temperature to be permanently recorded on a chart. Many plants, especially those of non-licensed pasteurisers, are not equipped with a recording apparatus. There are perfectly legitimate and well-known reasons, particularly in relation to the cream line, which result in the pasteuriser aiming at the lower rather than higher part of the authorised five degrees range of temperature. In the absence of a recording apparatus, it is impossible to ascertain whether or not the required temperature of 145°-150° F. for 30 minutes has, in fact, been consistently maintained. In the United States of America, not only is a recording apparatus essential, but the apparatus is kept under lock and key and is guarded officially almost as closely as a customs officer in this country watches a bonded store. In spite of this fact, the United States of America Department of Agriculture, in a recent bulletin on the subject of bovine tuberculosis,

* Presidential Address to the Veterinary Hygiene Section of the Royal Sanitary Institute Congress, Glasgow; delivered on July 9th, 1931. Reproduced from *The Journal of the Royal Sanitary Institute*, December, 1931: Vol. lii, No. 6.

makes the statement: "While it is true that proper pasteurisation of milk destroys the living organism of tuberculosis . . . some of the milk so treated is not always made entirely safe."

I freely admit that commercial pasteurisation, with all its defects, does very materially reduce the amount of tuberculous milk which would reach the market if left untreated. But, whether from failure of the human element or owing to the development of faults in the plant, pasteurisation cannot, as is so commonly supposed, be accepted as 100 per cent. efficient. Generally speaking, the control and supervision of pasteurising plants in this country leave room for improvement. The loose general statement in the Milk (Special Designations) Order should be replaced by some specification with which pasteurising plants must comply before approval. In the United States of America, where the pasteurisation of milk is almost universal, it is worth observing that at the present time extraordinary efforts are being made with the object of eradicating bovine tuberculosis for combined public health and economic reasons.

It is widely believed that the dilution of infected milk by bulking the whole of the milk of a herd reduces the risk of infection to the human consumer. If the biological test may be taken as an indicator of the risk of human infection, the opposite would appear to be the case. Dilution simply makes the whole bulk infective. A bulk sample representative of 150 gallons of milk which contains the udder secretion of a single cow with tuberculous mastitis will certainly come up positive to the biological test. Moreover, milk equally diluted and then subjected to flash pasteurisation will still come up positive, though the evidence of infection in the guinea-pig will probably not be manifest for six or eight weeks after inoculation. Faced recently with a series of positive results within a short period in milk so diluted and treated, I caused detailed investigation to be made into the sources of supply. The biological test showed the milk of only one of the twenty producers concerned to be infected. On the farm a single cow was found with tuberculosis of the udder. Infection of the milk ceased with her removal.

It is well known that the biological test is extraordinarily delicate, and that the guinea-pig will respond to very minute doses of the tubercle bacillus. In relation to this question of dilution, it would be interesting and of value to ascertain what amount of dilution is necessary before infected milk loses the power of causing tuberculosis in guinea-pigs by inoculation, and whether in commercial practice in the larger creameries that degree of dilution is ever reached in the ordinary process of bulking. It may well be that diluted tuberculous milk becomes harmless to a human consumer at a much earlier stage, but so long as tubercle bacilli are present and capable of infecting guinea-pigs, it would be unwise to ignore the possibilities in relation to the infant depending wholly on cow's milk for its nourishment.

I have no experience of certified Grade A (T.T.) milk giving a positive result to the biological test, but I know that positive results have been experienced in England. In looking for an explanation of such results, it is of vital importance to ascertain the detailed history of the herd which has furnished the infected milk. Infection is most likely to occur in herds which are recruited by the purchase of non-reactors, either in the open market or from infected herds. This procedure is quite competent under the Milk (Special Designations) Order in respect of licensed herds. In my opinion, herds so recruited ought not to be described by a designation which indicates that they are tubercle-free. Experience has shown that too large a percentage of such recruits fail when the next six-monthly tuberculin test comes round. Moreover, this method of recruitment always leads to disaster. Disaster may be delayed, possibly for several years, but sooner or later it is inevitable. Failure of the tuberculin test is then commonly alleged in explanation of what is, in fact, faulty and mistaken management.

It is quite commonly believed that tuberculosis of the udder is one of the end effects of tuberculosis. To a less extent it is believed that miliary tuberculosis occurs chiefly in extensively affected animals. These two forms of tuberculosis are responsible for the major proportion of milk infection. Both may, and in fact do, occur at relatively early stages of the disease. It is not at all uncommon to find, on *post-mortem* examination, a well-marked tuberculous mastitis in association with very limited and comparatively recent lesions in the mesenteric lymphatic glands and nothing elsewhere. Similarly, in my experience miliary tuberculosis in bovines occurs more frequently in association with relatively young active lesions of limited distribution than with widespread older lesions, whose character indicates chronicity rather than active progression. A review of my records a few years ago showed, in 48 per cent. of udder cases, the disease was not in an advanced stage. A colleague recently informed me that on the basis of classification under the Tuberculosis Order 35 per cent. of his udder cases fell into the not-advanced class.

It will be obvious from what has been said that there is always a possibility that a non-reactor to tuberculin derived from infected stock, and carrying the seeds of infection though not yet capable of reacting, may, before the lapse of six months, when the next test is due, have become an udder or a miliary case. This possibility is, in my opinion, negligible in an occasional reactor in a self-supporting herd. The recruitment of tuberculin tested herds from doubtful or infected sources is, therefore, fundamentally unsound. In order to qualify for a licence for the sale of certified or Grade A (T.T.) milk, it should be made a condition of the licence that the herd producing the milk should be self-contained, or should be recruited so far as may be necessary only from clean, self-contained herds. This, I am tempted to think, is a development which will become inevitable in the future.

The rapidity with which clinical manifestations develop and progress after tuberculous infection has become established in the udder varies considerably. Sometimes the progress is rapid, but there is plenty of evidence to show that a cow may regularly discharge tubercle bacilli in her milk for two to three months before she develops clinical symptoms capable of detection after the most detailed examination of the udder. Further, there is a small minority which can only be located by means of group and individual sampling entailing, with the original bulk sample, a period of at least three months. At the end of this time no clinical symptoms in the udder are manifest, yet the evidence that tubercle bacilli have been continuously

eliminated is clear. I am awaiting the opportunity of following up some of these cases. It would be of value to learn whether these animals, or some of them, will develop clinical symptoms in the udder, and after what period of time. It would also be of value to ascertain whether, in some of these cases, the source of the bacilli is a lesion in the mammary gland, or whether the mammary gland merely acts as a channel of elimination from lesions elsewhere. In the latter case, the importance of elucidating the circumstances in which this may occur needs no demonstration.

Fowler and Wright, in a recent review of the occurrence and origin of reactors in licensed tuberculin tested herds in Scotland, show that the newly purchased animal is the source of the majority of reactors. They proceed to express the view that there is probably in each year not more than one dangerously infected animal among the whole of the licensed tuberculin tested herds in Scotland. Since new purchases provide the majority of reactors, the risk of finding a dangerously infected animal in the herd which is wholly self-supporting is infinitely less. I have no hesitation whatever in expressing the view that, so far as safety from tuberculous infection is concerned, milk from a properly managed self-contained tuberculin tested herd should be given first place. Yet it is an extraordinary fact that despite the widespread and sometimes alarming publicity which has been given in the daily press to the dangers of tuberculous milk, too large a percentage of the milk produced from well-managed, self-contained, tested herds in Scotland fails to find a market under a designation descriptive of its character. Much can be done by representatives of the medical profession, of local authorities, and by others attending conferences such as this, in fostering the production and encouraging the purchase of this class of milk. I feel I will have accomplished something by my remarks if some, at least, of my hearers go away with the impression that it is a part of their duty to the public to do so.

Tuberculosis Immunisation Experiments in Ulster.

In the Ulster House of Commons, Mr. Nixon asked the Minister of Agriculture whether he could state if his Department was conducting any experiments with Spahlinger treatment as a preventative of tuberculosis in cattle, or any other experiments of a similar nature; the general results and conclusion of any such experiments, with costs up to date; and whether it was the policy or intention of the Minister to continue such experiments.

The Minister replied that when introducing the estimates for his Ministry in May last he explained to the House that a sum of £400 had been provided for the purpose of conducting experimental work on the immunising of cattle against tuberculosis. On that occasion he informed the House that some considerable time must necessarily elapse before any report could be issued concerning this work. The experiment was only in its initial stages, and, as very considerable harm might result from any premature statement he must ask the hon. Member to accept his assurance that he was satisfied with the progress which had been made.

Schalk found that less than 1 per cent. of the eggs of tuberculous fowls are infected with the tubercle bacillus and presumably infected eggs seldom hatch, since avian tuberculosis is not transmitted to the embryo through the egg.

Routine Veterinary Inspection of Dairy Cattle: Mainly from the Point of View of Tuberculosis.

I.—William G. Savage, B.Sc., M.D.
County Medical Officer of Health, Somerset.

[In its issues of April 25th, 1931, and September 19th, 1931, *The Medical Officer* published, under the above title, the respective articles reproduced herewith, upon the subject of which we comment editorially in this number.—Ed.]

Introduction.

Many local authorities, recognising the part played by the milk supply in spreading tuberculosis to man, are anxious to do what they can to limit this evil. While a number of procedures are available, all are of very limited utility. The method of regular routine inspection of dairy cattle has been suggested as a valuable means to attain the object in view. It has the merit that it does not require additional legal powers as it can be put into practice under existing enactments. Examined without detailed study it seems desirable and practical and therefore merits very critical consideration. It also is being strongly advocated by the majority of the veterinary profession. A system of veterinary inspection has been adopted by a number of county councils and from time to time resolutions are sent out from one or two county councils strongly advocating this procedure and asking for its adoption. Many medical officers of health therefore must have been asked their opinion and my views have been solicited in several instances. The following brief note may therefore be of assistance. It will be noted that after critical examination I have been unable to endorse its value.

The Present Position.

In Scotland routine inspection under the Milk and Dairies (Scotland) Act, 1914, and section 4 (2) reads:—

> "It shall be the duty of the veterinary inspector from time to time, and once at least in every year, to inspect the cattle in every dairy in the district and to report to the local authority the result of every such inspection."

In England local authorities may appoint veterinary inspectors but in no Act or Order is there any suggestion of their use for the routine inspection of dairy cattle.

The veterinary profession, with some dissentients, stress the value of this routine inspection and urge that it be adopted as part of our general public health procedure. At least half a dozen county councils in England have adopted it and put into practice some form of routine inspection but of varying degrees of thoroughness. It is to be noted, however, that almost all the stress is laid upon its utility to reduce infection of the milk supply and nothing is said as to its influence upon bovine tuberculosis.

The Scientific Problems Involved.

Every administrative problem succeeds or fails in so far as it is based upon scientific principles. In these cases these principles are fairly clear-cut and susceptible to definite analysis. The essential facts governing the question are the following:—

Annual examinations are commonest, bi-annual are

practised in some areas but nowhere outside cities (where the cow population is small and which do not affect the problem) are more frequent examinations carried out. We can accept quarterly examinations as the extreme limit administratively possible.

Even granting quarterly examinations the following facts apply :—

(1) Apart from the use of tuberculin, the use of which is outside the scheme, veterinary science cannot diagnose tuberculosis in cattle in its early infective stages. This applies equally to all the infective types, including pulmonary tuberculosis, which are the chief factors spreading the disease amongst bovines.

(2) Herds are unstable combinations and additions and withdrawals are constantly being made. Even were the veterinary surgeon able to detect and eliminate all tuberculous animals so soon as they become infective these herd changes would within a few weeks cease to give any guarantee that the herd remained non-infective.

(3) There are many sources of tuberculous infection to bovines outside infective cows.

(4) While our knowledge of the resistance of bovines to tuberculosis infection is limited, we do know that cows, subject as they are to antiphysiological treatment and unhygienic surroundings, readily contract tuberculosis. There is no scientific evidence showing that the removal of grossly infective cows is a factor in reducing the incidence of bovine tuberculosis. On the other hand, there is abundant evidence that slight unrecognisable (clinically) cases readily spread the disease.

(5) There is abundant evidence that the initial lesions of udder tuberculosis, during which material numbers of tubercle bacilli are passed into the milk, cannot be detected clinically by the most skilful veterinary surgeon and the condition can only be *suspected*, much less diagnosed, at some stage which may be months in duration during which tubercle bacilli have been constantly disseminated into the milk.

Application of these Facts to the Administrative Problem.

I do not think any of the above conclusions can be controverted. Their application suggests the following deductions upon any system of veterinary inspection that is administratively practicable.

(*a*) That nothing is to be expected in the direction of any reduction in the incidence of bovine tuberculosis.

At its very best it only removes a certain number of infective cases at variable stages after they have become infective. Their infective potentialities before detection and the infective material undetectable are adequate to keep up infection to the limit imposed by natural resistance. Experience in routine inspection areas amply bears out this contention.

(*b*) That it will have a definite, but limited, effect upon the amount of infection of the milk supply with tubercle bacilli. The extent of the reduction will depend upon many factors, the chief being the frequency of the inspections, the efficiency of the veterinary staff and the control exercised and possible to be exercised over the fluctuating bovine population.

(*c*) The diminution of the infectivity of the milk supply as regards the presence of tubercle bacilli is a reduction merely, not an elimination. So little is it an elimination that it is not possible to affirm that the milk of a herd of cows immediately after a comprehensive veterinary inspection is free from tubercle bacilli. I have on a number of occasions been able to show by bacteriological examination that the milk of such a herd still contains tubercle bacilli.

Administrative Difficulties under existing Legal Provisions.

These have to be considered, as they distinctly weaken the efficiency of any system of veterinary inspection of bovines.

1. There is an entire absence of any statutory requirements on the part of the cow owner to facilitate the work. The Milk and Dairies Order, 1926, is very indefinite. Section 8 states :—

" Every county council and county borough council shall cause to be made such inspections of cattle as may be necessary and proper for the purposes of the Act and of this Order."

The Ministry of Health in their circular 757 (January, 1927) on the Order imply that in their opinion it is legal for county councils to institute inspections of cows other than the examinations of those in suspected herds, for they state :—

" It is for each county council to decide, according to the experience available in their area, what amount of further inspection is desirable. It was not considered practicable, in view of the varying circumstances of different counties, to require in the Order that county councils should undertake the regular periodical inspection of all dairy cattle. Inspection conducted on purely routine lines may not, in all cases, be the best means of attaining the objects of the Act. The Minister is, however, aware that some local authorities have, in the past, carried out periodical inspections, and have been satisfied that the results were beneficial. Where these conditions exist it is suggested that the county council should consider the advisability of continuing the established practice."

It will be noted that this does not suggest any obligations upon the cow owners to facilitate this routine inspection. It is true that section 1, sub-section (3) of the Milk and Dairies Act, 1915, states, " If any person is guilty of a contravention of, or non-compliance with, the provisions of any Milk and Dairies Order, he shall be guilty of an offence against this Act." This does not take us very far, as there is no provision in Act or Order dealing with routine veterinary inspection, so any failure to facilitate such inspection can hardly be considered a contravention.

(i) It is doubtful if there is any obligation on his part to permit routine inspection of his animals unless disease is suspected.

(ii) Apart from the not very definite requirements of the Movement of Animals (Records) Order of 1925, he is not obliged to disclose the changes in his herd or say what becomes of any suspected animals. They may be transferred to another herd which has just been inspected.

(iii) Unless an animal comes within the grossly diseased conditions mentioned under the Tuberculosis Order he is under no obligation to notify any suspicious animals and can go on milking them

until he is inspected, perhaps six months after they are infective.

(iv) He is under no obligation to facilitate inspection by bringing in his cows. This in effect makes summer inspections impracticable, so much so that in many areas no inspections are considered possible until the cows are brought in for the winter.

(v) If defects favouring the spread of bovine infection are pointed out the cow-keeper is under no obligation to alter his methods, he can still go on facilitating the spread of tuberculosis.

2. Great stress is properly laid upon the detection of udder tuberculosis. The difficulties of detection are decidedly enhanced when udders are full of milk. To get maximum efficiency of inspection the udders should be nearly milked out, but in practice the farmer does not like this and sometimes actively objects and he cannot be constrained. It is administratively impossible to confine inspections to normal milking times and this is a factor militating against efficient inspection.

Assessment of the Value of Routine Veterinary Inspection.

The fact that it does nothing to reduce bovine tuberculosis removes it from the category of a true preventive measure into a mere subsidiary procedure to diminish the infection of the milk supply. At its best it can only yield a limited partial reduction of this risk and therefore cannot be advocated as a substitute for better methods. The money available for the prevention of bovine tuberculosis is in practice bound to be limited and if it is poured out on this line of action, doomed to failure in advance by the very fact that its principles are unscientific, it is bound to be restricted in other directions.

Veterinary assistance for dealing with bovine tuberculosis is invaluable and absolutely necessary. What is objected to is the assumption that routine veterinary inspection alone can be of service without the complete *obligatory* co-operation of the agricultural interests and without being an integral part of a well-thought-out system of dealing with bovine tuberculosis as a disease capable of elimination on scientific lines. As part of such a scheme veterinary examinations can play an essential part, alone their limited saving of a small amount of tubercle bacillus infection of the milk supply is not worth the heavy, *undiminishing* expense entailed. In other words, to deal with bovine tuberculosis we need a proper scheme for its eradication and as integral parts of that scheme tuberculin testing and veterinary inspection are necessary adjuncts. In my opinion it is scientifically unsound to rely on veterinary inspection to protect the milk supply from conveying tubercle bacilli. It is asking of it something it is not capable of performing.

It is usually advocated that a good many other infective conditions in cows are also detected and eliminated. A study of the actual figures demonstrates that while many are of importance in animal infections, they are of very minor significance in relation to the infectivity of milk to man. This point scarcely affects the human problem.

If the saving of a certain amount of infection is to be the criterion of the adoption of routine veterinary inspection, it is worth pointing out that better results can be achieved much more cheaply by a system of bulk sampling of herds and then concentrating upon those herds found to be yielding milk containing tubercle bacilli by combined veterinary and bacteriological methods. I have made some calculations as to the relative cost of the two procedures. The system of preliminary sorting by bacteriological herd testing followed by veterinary inspection (and further bacteriological tests) of the positive herds only would in my opinion cost approximately half that of using veterinary inspection as the sorting agent and certainly would be far more effective as a means of detecting those herds the milk from which contained tubercle bacilli. I do not advocate such a procedure, since it has the defect of routine veterinary inspection by effecting merely a partial reduction of infectivity and by not being truly preventive.

. . . . .

2.—T. Eaton Jones, F.R.C.V.S.

Chief Veterinary Officer, Liverpool.

In *The Medical Officer* of April 25th, 1931, there appeared an article under the above title [inserted in original.—Ed. *V.R.*] by Dr. Savage. No doubt it will be accepted as authoritative and indeed the author voices his expectation that it will be of assistance to medical officers. It has already had an effect on the policy of a certain local authority and in fact has been brought to my attention by extracts appearing in inter-authority official communications. I feel therefore impelled to utter my opinion unequivocally that whatever Dr. Savage intended, the effect of his article is dangerously obstructive to the progress of public health practice. Any medical man is entitled to hold views on so closely allied a subject as veterinary science according to the quality and degree of his information, but that he should assume the responsibility of guiding his confrères is questionable.

As I read it Dr. Savage makes two main points:—

(*a*) That routine veterinary examination of dairy cattle with a view to controlling tuberculous milk has a very limited value.

(*b*) that a system of bulk sampling is cheaper and more efficient.

Now the expressed opinion of the Minister of Health is in direct opposition to that of Dr. Savage on the first point,

"The information at present available, however, justifies the view that routine inspection, particularly if combined with other measures, can be of great value, not only directly by bringing about a reduction in the number of infective cows, but also by its educative influence and by the control of non-tuberculous diseases incidentally discovered."[1]

En passant, it is worthy of note that there is no veterinary surgeon attached to the Ministry of Health. Still let us admit that the first point is arguable The second is not. It is simply wrong.

The particular danger of the article lies in the fact that most of the author's statements are only half truths, and many of his points have nothing to do with the practical problem of tuberculous milk. Let us examine some of them.

"Assessment of the value of routine veterinary inspection. The fact that it does nothing to reduce bovine tuberculosis removes it from the category of a true preventive measure into a mere subsidiary procedure to diminish the infection of the milk supply."

Now what is the evidence on which he affirms that it does nothing to reduce the incidence of bovine disease? To find this we must go to his book[2] of which the article is a very minor edition. There he quotes only continental experience of certain methods. The reason, of course, is that there has never been any serious organised attempt made here. If he wrote "routine examination may do little or nothing to reduce tuberculosis in bovines" we could agree, but in view of his introductory paragraph, the reduction of bovine disease is entirely outside the subject of the article. The simplest, and often the most convincing, form of argument is to set up one's own Aunt Sally and knock it down. Who has advocated routine inspection (I prefer "examination") as a means, by itself, of controlling bovine tuberculosis? Certainly not the veterinary profession. As a matter of fact there is in existence a scheme with the object of reducing the disease gradually to a stage where we can consider final eradication, but its plan of campaign is not "routine inspection." The immediate aim of such action *is not the prevention of infection in cattle but in children,* and surely the evidence of danger is ample now. Dr. Savage is condemning one cog-wheel because it cannot do the work of the whole engine.

> "... *doomed to failure in advance by the very fact that its principles are unscientific.* ..."

This is a hard saying and difficult to comprehend. What are the principles that are so contemptuously dismissed? The author does not specify, though I suspect that he is still contemplating his Aunt Sally. "Unscientific" does not hurt as much as it might because we can say "tu quoque." "Do not spit on the tramcar—penalty forty shillings." The tired workman thinks forty shillings a lot to pay for his simple pleasures, so he opens the window and spits into the world at large. The only science exhibited is in the skill of the workman. Are we to pour scorn upon the V.D. clinics in our ports because sailors don't care, or because of the difficulties of continuity of treatment? In the opposite direction I might point to an article[3] published by Dr. Savage's colleague, a chemist, an article which proves by beautifully scientific formulæ that the microscope is five hundred times less sensitive than the guinea-pig in searching for tubercle bacilli in milk. I have experience of cases where the microscope succeeded when the guinea-pig failed. So efficient do I find the microscope, properly used, that it is practically never necessary to use guinea-pigs when dealing with single milks. Why employ a stethoscope to detect an explosion? But I do not make dogmatic statements that spitting bye-laws and V.D. clinics are doomed to failure because they are not wholly scientific, nor that the guinea-pig is useless because it is super-scientific. Surely it is a truism that the methods of exact science cannot properly be applied to a biological problem with its numerous and incalculable variables.

> "... it is not possible to affirm that the milk of a herd of cows immediately after a comprehensive veterinary inspection is free from tubercle bacilli."

This is correct. It is also correct to say that after a bulk sample of milk has been taken the result is not known for a month, and if then negative it is no guarantee that, at the time of the sample, there was not a tuberculous udder in the herd. I have found a clinically developed case in a small herd from which a bulk sample was taken and eventually returned negative. The cow was slaughtered long before the erroneously negative result was made known. Such incidents cannot be rare in view of the difficulties of ensuring that the bulk sample is truly representative. On the other hand, when the result is positive, the only sound interpretation is that a sample of milk, supposed or sometimes known to have come from a certain group of cows, contained living tubercle bacilli, which may have originated from a tuberculous udder. The investigation of their origin is inevitably a month late.

> "If the saving of a certain amount of infection is to be the criterion of the adoption of routine veterinary inspection, it is worth pointing out that better results can be achieved more cheaply by a system of bulk sampling of all herds and then concentrating upon those herds found to be yielding milk containing tubercle bacilli by combined veterinary and bacteriological methods. ... The system of preliminary sorting by bacteriological herd testing ... would in my opinion cost approximately half that of using veterinary inspection as the sorting agent and certainly would be far more effective ..."

From the whole tone of the article one might assume that Dr. Savage regards the "certain amount of infection" as negligible. Reference to his book, however, shows that he was aware of the implications when he wrote:—

> "One fundamental difficulty is our ignorance of the conditions necessary for a successful human infection with the bovine bacillus. While we are probably correct in assuming that infection by the alimentary route, at least after the first year or two of life, is a matter of some difficulty, and that a very few bacilli are hardly adequate to overcome the natural handicaps to successful infection, we have but limited evidence to go upon. If we could be sure that only mass infection matters, it is evident that the *prompt* elimination of cows with clinically developed tuberculosis of the udder and of those suffering from advanced tuberculosis would go a long way towards cutting out all the sources of infection that matter."

The nature of tuberculous mastitis in bovines is such that farmers cannot be expected to realise its dangerous nature unless they are specially educated to it, and even then its innocent appearance often deceives them. When there is no routine examination, then one can expect such cases to continue infecting the milk supply with daily and increasing doses of mass infection. The essence of the argument for routine examination is not that other sources of human infection are unimportant, but that mass infection must be assumed to matter, and that we can reduce it enormously.

A comparison of returns from areas where routine veterinary examination is practised with those from the country in general, shows beyond doubt that the cases exist and can be found. Taking the years 1927-9 inclusive, of the total cases of bovine tuberculosis dealt with in Liverpool herds, tuberculosis of the udder accounted for 53·1 per cent. The comparative figure for England, Scotland and Wales was only 16·5 per cent. The West Riding of Yorkshire began to institute routine veterinary examination in 1927. The proportion of udder cases dealt with in that year agreed very closely with the level for the whole country, actually 16·15 per cent. as compared with 16·5 per cent. As the work got into its stride the number of cases leaped upwards. In the year 1928-9 the figure was 28·2 per cent. In 1929-30, 35·1 per cent. In my annual report for 1928 I published a calculation which suggested that only one out of seven cases of tuberculous bovine mastitis is dealt with officially

in this country, leaving an enormous amount of mass infection uncontrolled.

On the question of cost, any medical officer must realise that, within limitations, the problem is not so much one of price as of humanity and of knowingly allowing the dissemination of an amount of mass infection which it is practicable to control. At the appallingly low consumption figure of one-third of a pint of milk a day per person, which is usual, one tuberculous udder in an ordinary herd producing 50 gallons of milk, provides twelve hundred people with a dose of tubercle bacilli, not once, but daily for weeks, perhaps months. We have a doctor's estimate that every case of bone tuberculosis of bovine origin in a child costs £400. The treatment of surgical tuberculosis costs the city of Liverpool £20,000 per annum. But these are figures for medical men to assess, not a veterinary surgeon.

One is puzzled to know on what inquiry Dr. Savage bases his extraordinary assertion that a system of bulk sampling will cost half as much and be far more effective. If the whole of the salary and expenses of a veterinary surgeon be charged to the cases of tuberculous mastitis he finds, and only a part of the salary and expenses of the sanitary inspector and the laboratory dealing with the bulk samples charged to the cases they find, I am still confident that the veterinary surgeon will win handsomely. Add to this that action as a result of a bulk sample is always a month late so that "*prompt*" elimination of the mass infection is impossible. The only fair comparison is where both systems are employed parallel and independent of each other, as is the case in Liverpool. Sanitary inspectors of the medical officer's department take one bulk sample per annum from every herd within the city. This is much more than is likely to be done in any country district. Incidentally one-third of the whole supply is produced within the city boundary. Simultaneously and independently, the herds are subjected to examination by a veterinary officer, in addition to his other duties, between three and four times per annum. It is difficult to estimate the costs of both systems with exactitude inasmuch as one cannot assess the proportion relative to other work performed by the officers concerned, but there is no doubt that the cost of annual bulk sampling far outweighs the other, *while its results are less than one-third*. Taking the years 1925 to 1930 inculsive, from an average population of 3,850 dairy cows:—

Bulk sampling (1,615 samples) finds	21	cases of tuberculous mastitis:
Routine veterinary examination finds	68	do.
Notifications from owners find ...	38	do.

When one realises that notifications from owners are inseparably the result of routine visits with their educative effect, it is seen that the bulk sample system has a very low degree of comparative efficiency. There is probably no other local authority where the systems can be so fairly contrasted, but that the result is not due to any peculiar local factor can be shown by examining other available statistics, preferably in country districts. In Lanarkshire, of 64 cases dealt with in 1930, 47 or 81 per cent. were found on herd inspection. Here the herds are examined only once per annum. In the West Riding of Yorkshire, of 292 cases in the year 1929-30, 207 or 70 per cent. resulted from routine examination. The inference is that without such a system the great majority of existing cases of tuberculous mastitis are permitted to continue polluting the milk supply indefinitely.

The attitude of veterinary men in public health services is that animal disease and animal products are clearly veterinary problems, but that in the case of the latter and of such diseases as are communicable to man, there must be close co-operation with the medical officer. This can hardly be called unreasonable. If it be argued that veterinary public health services are not uniformly developed over the country and therefore not available, that is not our fault. The advocacy of a system of routine veterinary examination of dairy cattle does not rest on the narrow, and sometimes ill-informed, aspect of public health practice dealt with by Dr. Savage. There is no veterinary authority qualified to speak on the subject who desires to see a staff of veterinary surgeons created simply to search for tuberculous mastitis. I think, however, that such a staff would justify its existence and show an actual financial profit in prevention of expenditure on human disease. But the training and activities of the veterinary profession are more particularly directed to the health of animals and the interests of stock owners. Tubercle, admittedly important, is only one of the diseases with which we have to contend, and is only one of the problems of the milk supply. We envisage the whole of milk sanitation, with housing and management of animals properly viewed in relation to all the zymotic diseases (some of which are more expensive to the farmer than is tubercle) and all the legislation dealing with diseases and welfare of the animal population, as being the function of the veterinary service we advocate. The projected expense of routine examination of cattle would not be excessive in such an administration. Dr. Savage will realise that the veterinary profession needs the sympathy and help of the medical profession rather than the apparent scorn of his article, which his less well informed colleagues can quote and misquote. One knows from his book that he is not really antagonistic to a liaison between the medical and veterinary public health services, and that the sins of his offending article are those of omission, probably inadvertent. He advocates neither routine examination of cows, nor bulk sampling. Then what, as a responsible officer, does he propose to do about the undoubted dangers of the country's milk supply?

References.

[1]Reports on Public Health and Medical Subjects. No. 63. A Memorandum on Bovine Tuberculosis in Man with Special Reference to Infection by Milk. Ministry of Health. 1931.

[2]"The Prevention of Human Tuberculosis of Bovine Origin." William G. Savage, 1929.

[3]"A Simple Calculation of the limit of Value of the Microscopical Examination of Milk for Tubercle Bacilli." D. R. Wood. *The Analyst*, March, 1931.

A Reply from Dr. W. G. Savage.

The same issue (September 19th) contains the following reply from Dr. Savage:—

Sir,—I am enabled to make a reply to Mr. Jones' discussion (appearing in this issue) of my article on routine veterinary inspection of dairy cattle by his courtesy in sending me an advance proof of his contribution.

I am glad that so well known a veterinary surgeon as Mr. Jones discusses my article, and I would like to assure him that what all medical officers of health desire is a true appreciation of this important problem, which can only be arrived at by also considering the veterinary point of view. Unfortunately he does not advance any new arguments, and it is evident that the differences between us are not so much on facts as on a point of view. I will try and make clear this difference of point of view as I see it.

Evidently we are in agreement that routine veterinary inspection plays no part in the prevention of bovine tuberculosis and that its aim as regards tuberculosis is the prevention of infection to man. We are further in accord that, adequately carried out, it can diminish to a certain extent infection to man. Mr. Jones does not suggest that it eliminates the danger to man, he does not refute the possibility that other and better methods may be more satisfactory, while he agrees that it does not obviate the need for preventive methods to deal with bovine tuberculosis as an animal disease.

He just pins his faith to the fact that it is beneficial, and quotes with approval the Ministry of Health statement that it "can be of great value, not only directly by bringing about a reduction in the number of infective cows, but also by its educative influence and by the control of non-tuberculous diseases incidentally discovered."

To Mr. Jones the fact that the operation of routine veterinary inspection effects some measure of reduction of the infectivity of the milk supply is quite sufficient proof of its value and warrant for quoting a contrary opinion as "dangerously obstructive to the progress of public health practice."

After over 30 years' practical experience of public health work in most of its branches, I am doubtful if there is any doctrine which has done more harm to public health than the one which evidently Mr. Jones holds, that because a measure does *some* good we should advocate it, and as a corollary because we oppose it we are standing in the way of public health progress. Time after time we are led along the wrong path because of its facile lure instead of doing some hard thinking and finding a real solution on scientific lines. What is needed in every problem is not a partial solution, not something which does some good, but neither gives security nor goes to the root of the trouble, but the *best* means of dealing with the problem in question.

I cannot conclude, and there is no evidence in Mr. Jones' article to suggest that my contentions are wrong, that the method of veterinary inspection which he advocates is the right way to deal with this problem, and all this talk of prevention of infection to children is beside the point if it is not the best way. What is the right way to reduce both infection to man and bovine tuberculosis? The latter is no Aunt Sally as Mr. Jones calls it: it is the heart of the business, just as prevention is the keynote of public health.

I set out in my short article why I consider that a method which gives neither security to the consumer nor effects any reduction in the potential risks from year to year is the wrong way and should not be pursued. Mr. Jones states that "whatever Dr. Savage intended, the effect of his article is dangerously obstructive to public health practice." May I assure him that it was my intention in writing it to point out the fallacies and limitations of the procedure he so strongly advocates, with the hope that my article would do something to prevent public health authorities and their advisers from taking what I regard as a wrong turning in the path of progress. I am glad to hear that it has been of some help in that direction.

Mr. Jones will note that I do not discuss the question as to whether routine veterinary inspection is worth its place as an agricultural measure. I recognise that that is a veterinary problem. What I deal with is the attitude of many of the veterinary profession who tell us—the medical advisers of local authorities—that it is a measure *we* should adopt to protect the milk supply. On that point all medical officers have the right and the duty to arrive at their own opinion and to frame their own judgment. I have a great admiration for the work of the veterinary profession and agree that they should take a material share in public health work, but that does not include instructing us how we should use them in a particular public health problem which in its essentials is a pathological problem upon which we are very competent to arrive at an opinion.

In conclusion, Mr. Jones asks, "what, as a responsible officer, does he propose to do about the undoubted dangers of the country's milk supply?" The answer is largely given in my book on "The Prevention of Human Tuberculosis of Bovine Origin." The reader will see there what I advocate and failing it what I fall back upon. What we have to accept as the best line of attack is in part discussed in my article in the *Lancet* of March 7th, 1931.

Thoroughbred Breeders.

Lord D'Abernon, president of the Thoroughbred Breeders' Association and representative of the Chancellor of the Exchequer on the Racecourse Betting Control Board, speaking at the Association's annual meeting at Newmarket on December 9th, stated that it was impossible to regard the year 1931 as satisfactory, but consolation was to be derived from the fact that during the last 10 years thoroughbred horse-breeders had enjoyed exceptionally good times.

"I have taken out some interesting figures," Lord D'Abernon continued, "showing how we fared in the recent past compared with breeders in America and France. A comparison of the three countries reveals the fact that England suffered the least. The greatest fall in prices took place at the Saratoga Sales in the United States.

"As regards the thoroughbred horse-breeding industry in this country, apart from the relief to be expected from a general improvement, when it occurs, there is some reason to hope for a special advantage to breeders from the totalisator. The figures from the totalisator for the year 1931 are fairly reassuring. The total turnover figure in 1931 is likely to be about £4,000,000, as compared with just over £3,000,000 in 1930, while the total gross income accruing to the Board should amount to some £400,000. It remains true that the total turnover, though larger than last year, is a quite inadequate fraction of the total money passing in betting. It appears that in 1928-9 the amount of betting returned to the tax authorities from on-the-course betting amounted to £46,000,000, while off-the-course betting amounted to £42,000,000.

"But since 1928-9 there have been important changes. Times have been bad, so that the volume of betting has diminished as a result. There has also been a specific cause for this diminution in the establishment of the totalisator, which has undoubtedly reduced the usual stake risked by the ordinary follower of racing."

The Veterinary Record.

December 19th, 1931.

Routine Veterinary Examination of Dairy Cows.

The question as to whether the routine examination of our milk-producing cows by veterinary officers of local authorities is worth the cost and the time devoted to it, has once more been raised by the articles we publish in this issue, reprinted from *The Medical Officer*. Dr. Savage, whose interest in bovine tuberculosis and its infectivity to man none of us can doubt, and whose work on this subject all interested in veterinary public health must have read, has whole-heartedly condemned the system of routine veterinary inspection of our dairy cows. In his spirited reply to this condemnation, Mr. Eaton Jones is not only deserving of the best thanks of our profession, but also of the general public who are the consumers of milk.

The Medical Officer is " A Journal for Medical Men in the Government and Municipal Services " and we consider it most unfortunate that such a well-known authority as Dr. Savage should roundly decry to his brother medical officers a system about the practical application of which—at least judging by his arguments—he appears to know so little. Dr. Savage makes some astonishing statements in his desire to belittle the value of routine inspection, as, for instance, when he writes: " There is an entire absence of any statutory requirements on the part of the cow owner to facilitate the work," and: " It is doubtful if there is any obligation on his part " (*i.e.*, the cow owner's) " to permit routine inspection of his animals unless disease is suspected," and he also states that summer inspections are impracticable. We submit that the general experience where the work is carried out and Article 9, of the Milk and Dairies Order of 1926, completely contradict these contentions. It is difficult to see that because a system is not 100 per cent. perfect it should not be practised at all, or why the inspections should be condemned because " If defects favouring the spread of bovine infection are pointed out, the cow keeper is under no obligation to alter his methods; he can still go on facilitating the spread of tuberculosis." It would ill become a member of the veterinary profession to say that the work of the medical officer is of no use because the public are not compelled so to order their lives and those of their families as to accept and act up to his advice in the prevention of smallpox, scarlet fever, measles, influenza or even common colds.

Although Dr. Savage in his reply to Mr. Eaton Jones expresses satisfaction that he (Dr. Savage) may have been instrumental in preventing a local authority from instituting routine veterinary examination of its cows, he cannot claim to have induced any authorities which have gone in for the system, to give it up. We do not know of one authority which has not been satisfied with the results of such inspections once it has instituted them; in fact, it is these authorities that speak loudest in demanding that neighbouring counties or areas should do likewise. It has been proved over and over again that after a careful clinical examination of a dairy herd by an expert officer, the chances of a cow with a tuberculous udder being missed are small, and if later on one of the cows " breaks down " and produces tuberculous milk, which we must agree is always possible, it is no sound argument for never examining cows at all. Where there is no routine examination, the farmer does not appreciate what a tuberculous udder is like and consequently few, if any, such are reported; whereas, where farmers are accustomed to have their cows periodically examined the number of tuberculous udders reported goes up by leaps and bounds. Even if the universal pasteurisation of our milk supplies were made compulsory (though most of us will admit that this is not at present feasible and probably not advisable) there would still be no adequate reason why the health of the cows should not be closely supervised.

Fortunately all medical officers of health do not accept Dr. Savage's conclusions, for in its summary of evidence given to the Departmental Committee enquiring into local government, the Society of Medical Officers of Health stated recently, in demanding the appointment of veterinary officers to local authorities, " as a measure of protecting the health of the people, the routine inspection of dairy cattle is of the greatest importance." After the appointment of veterinary officers in a certain large county in England and the organisation of the staff to carry out the routine examination of dairy cows, one medical officer of health in the district said publicly at a meeting that he considered the appointment of the veterinary staff the best thing that the County Council concerned had done for the last fifty years.

It is not fair to suggest, as has often been done, that stressing the value of these inspections is the last word that the profession has to say in regard to the protection of our milk supply from tuberculosis, for is " The National " not now, following on the lead given by its Scottish Branch, doing its utmost to convince the powers that be that its scheme for the eradication of bovine tuberculosis should be given a trial? Until we can proceed with this or a similar scheme, let us not be afraid to press for the regular clinical examination of all dairy cows.

It was stated in the House of Commons that only seven per cent. of the population in the United Kingdom depend for their livelihood on pasture and agriculture. In the Irish Free State the percentage is 52, Canada 35, Australia 23, South Africa 31, New Zealand 28, and India 70.

Clinical and Case Reports.

Three Cases of Carcinoma.

K. A. Miles, M.R.C.V.S., Husbands Bosworth, Rugby.

Case I.—The first subject was a hunter gelding, aged about 14 years. This animal had been regularly hunted and turned out in the summer since he was six years old, and had always been in good condition. He was a brilliant hunter, but perhaps once every six weeks or so during the hunting season he would become "happy" and refuse to jump. This "happiness" might last for an hour or the whole day. This hunter was first noticed to be ill in the early part of September, while still at grass. The symptoms noticed on my first examination were:—temperature 104° F.; pendulous abdomen; swollen sheath and legs filled; appetite capricious; bowels normal; urine normal; great depression, but no sign of acute pain; rapid wasting had occurred. I am afraid that I did not arrive at a diagnosis at the time. The animal was then sent to my infirmary. The wasting continued very markedly; temperature remained 102° to 103° F.; pulse about 60; appetite variable; great thirst; abdomen more pendulous; sheath and legs more swollen; walked stiffly. Diagnosis at this stage was either an abdominal abscess or a tumour, and as the animal began to show acute pain, he was destroyed. *Post-mortem* revealed a huge tumour, about the size of a bushel basket, affecting the liver, stomach and omentum, and a few nodules in the intestines. The report from the pathologist to whom I sent the specimen was as follows:—"The growth is a squamous cell carcinoma, involving the liver and stomach walls."

The remarkable feature of this case is that the horse appeared to be normal (except for his occasional "happiness") for years and yet within three weeks of his illness being observed he was practically a walking skeleton and had to be destroyed.

Case II.—The second case was a carcinoma of the stomach of a bull terrier bitch. This bitch was brought to me with the history that, although otherwise normal and in good spirits, she had vomited about one hour after every meal for the last fortnight. Gastric sedatives, etc., were tried with no success.

Two X-ray photographs after feeding with Horlick's shadow food revealed no abnormalities. Another opinion was sought, but no diagnosis was made.

Vomiting always took place about half to one hour after every variety of meal; solids, liquids, predigested foods—all were returned.

Of course, in six weeks the animal was very emaciated, but even on the day I destroyed her she enjoyed a mouse hunt in the garden.

Post-mortem revealed a carcinoma of the lesser curvature of the stomach: the walls of this portion of the stomach had become so thickened that only a small probe could be passed through this thickened mass into the small intestine.

The food the bitch had consumed was digested and when ready to pass out into the intestine found the way blocked and was then vomited—accounting, of course, for the chronic sickness. During life no pain was noticed on palpation of the gastric area, nor was the dog depressed. No blood was passed. Of course, no thickening of the gastric walls could be felt.

Case III.—The third case is a carcinoma of the alveolar margin of the upper jaw of an Alsatian dog, aged four years. This case has not yet terminated fatally.

The tumour was removed, with a portion of the jaw bone, under a general anæsthetic, a wide excision being made. The report of the pathologist is:—"The growth is a squamous cell carcinoma. The age of this dog is unusually early for such a growth." This operation was performed in July, 1931, and so far no recurrence has taken place.

Intestinal Cancer in a Cat.

Hamilton Kirk, M.R.C.V.S.

A small-sized, red tabby male cat was brought for treatment with the history of having become, during the last few weeks, progressively emaciated in spite of a moderately sustained appetite.

The animal seemed quite alert, and very friendly, but was a sorry example of skin and bone. My first thoughts were "cancer or tuberculosis," and abdominal palpation seemed at once to support either theory, for a large firm body could be detected in the hypogastric region.

Chloroform was administered and the usual preparations made for the removal of this gland or growth; but upon opening the abdomen it was at once seen that the case was inoperable. Euthanasia was induced and the bowels removed. A dense growth of a size larger than a duck's egg was found attached, or rather surrounding the ileum some two inches from the ileo-cæcal valve.

The intestine was opened up, and within the substance of the new tissue, the bowel was found apparently to dilate and its contour to become lost. This specimen, together with the kidneys, than which no other organs were affected, were sent to Mr. J. Innes at Cambridge. An abstract of his report is as follows:—

"The growth consists of a large mass of neoplastic tissue (lympho-sarcoma) which, rather than being attached, is actually the thickened infiltrated wall of the ileum. The mucous membrane is ulcerated. Small metastatic nodules are present in the kidney, and as there was no evidence of secondary deposits elsewhere, the metastasis in the kidney is of interest."

A Meat Inspection Contrast.

"The export of British meat to France has been severely restricted since 1929. No meat may enter France unless it is accompanied by a certificate signed by the Central Veterinary Service of the exporting country testifying to the health of the animal when killed. British meat inspection, however, is in the hands of the medical officers of health, and their certificates are not recognised by the French authorities."—*Daily Telegraph.*

In commenting on the above, Mr. T. F. Prime, M.R.C.V.S., of Upper Norwood, writes:—"Here we have proof that meat inspection should be in the hands of veterinary surgeons, as France, for instance, will not recognise medical men as meat inspectors."

Reviews.

Dental Pathology Applied to Animals.

[**" Abnormal Conditions of the Teeth of Animals in their Relationship to Similar Conditions in Man."** Colyer, F. Dental Board of the United Kingdom, 44, Hallam Street, London, W.1. 1931. Price 5s. net. Pp. 167.]

English-speaking veterinary pathologists, unlike their German colleagues, have neglected the systematic study of disease of teeth and as a consequence teaching and practice have been confined mainly to operative procedures upon the grossly diseased dentures. Early in their academic training veterinary students are made familiar with normal teeth as a means of determining the animal's age. This instruction of students is good so far as it goes, but it does not go far enough; it is the monopoly of animal husbandry and of elementary veterinary surgery, whereas the book under review demonstrates very decisively that such teaching should be extended to systematic study in anatomy, physiology, pathology and hygiene.

Veterinary pathologists cannot fail to recognise that the majority of disease in domesticated animals derives from the alimentary tube, the turnstile of which is the teeth, but text-books of veterinary pathology do not become interesting or very instructive until the stomach is reached. On the clinical side disproportionate importance is given to diagnostic procedures and instrumentation on the exits from the body, possibly because the anus is more accessible and sympathetic to the investigator. To understand the mechanism of infection from the alimentary tube is one of the most important tasks before the veterinary profession and an intelligent appreciation of this problem by the student requires adequate instruction in its entrances as much as its exits. Those who have studied deeply the mechanism of infection from the alimentary tube will recognise that progress in overcoming this problem will be achieved by prophylactic rather than by curative measures.

The importance of prophylaxis as applied to the teeth is made evident in Sir Frank Colyer's studies of a variety of lesions of teeth in domesticated and wild animals. He has presented in a clearly expressed and tabulated text a story of the causation and mechanism of injury of dental and peridental tissues. The injuries due to environmental factors occupy the greater part of each section of the book and are of considerable importance to our profession.

He concludes that caries is the consequence of exposing the teeth to an unsuitable environment. In animals living in the wild state caries results from injury to the denture or to the cement, whereas the initial lesion in the majority of cases in domesticated or captive animals and in man is in the enamel. Sir Frank attributes the injury of the enamel to the diet containing fermentable carbohydrate, particles of which lodge about the teeth producing " stagnation areas." Of 484 horses from the London area 13·6 per cent. had caries of one or more teeth, more commonly of the maxillary teeth. Caries is very rare in grass feeders, both wild and domesticated, but its high incidence in city horses is attributed to the " mash " in the diet. It occurs in hutch rabbits fed on " middlings " in addition to the ordinary green diet. Caries has not been observed by the author in domestic cats or other Felidæ and it is rare in the domestic dog. Consequently " for the prevention of caries our efforts should be aimed at . . . . placing the teeth under a suitable environment," *i.e.*, correction of diet.

The author uses the term " paradontal disease," which he finds more correct than " pyorrhœa alveolaris," " alveolar osteitis " or " periodontal disease," to describe the slow destruction of the supporting structures leading to the loss of teeth. The disease has a high incidence in city horses (approximately 33 per cent. of nearly 500 examined). " In the horse the disease can clearly be traced to injury caused by the food," *e.g.*, chaff, grit and sand lacerating the mucous membrane of the gum. Wild cats or domestic cats and dogs which have to rend their flesh food are free from the disease but domestic cats fed on chopped meat are affected. It is very common in hounds, also in pet dogs fed on sloppy food. Thus the initial injury of the gum margin is the consequence either of trauma or of the chemical products of decomposition. Again, prophylaxis, *i.e.*, altering the environment of the teeth by means of natural dietry, is the index of future practice.

Injuries of the teeth and jaws due to physical causes, hypoplasia, attrition and abrasion, and positional variation of the teeth are also described and illustrated. The 217 illustrations (photographs and drawings) are excellent; they, with the comprehensive text, make the book a most valuable possession of every general practitioner. Its teaching will be of especial value to veterinary hygiene and pathology.

Tom Hare.

[**Was gibt es neues in der Veterinärmedizin? Jahresbericht für das Jahr 1930 (Novelties in Veterinary Medicine for 1930).** Compiled and published by Dr. Victor Puttkammer, Heilsburg. Price RM 6·50.]

The author, himself a practitioner, has made a survey of international veterinary literature as available in the original and abstracting sections of eight principal periodicals published in the German language with the very laudable object of helping his fellow practitioners to keep abreast of veterinary progress. The resultant survey is embodied in this book of some 180 pages, each page containing an average of three abstracts. The matter, which covers all aspects of veterinary medicine and surgery, is arranged systematically and an index is also provided, so that information is readily found. Almost every article is noteworthy and much of the subject matter must be new to people in this country. A few striking examples may be quoted here. Percain, a new anæsthetic, when injected into the abdominal cavity, anæsthetises the peritoneum and all the viscera so that all kinds of abdominal operations can be painlessly performed. Presumably the preliminary laparotomy must be done under local infiltration anæsthesia. Voluntary sex determination, in humans at any rate, is said to be possible by controlling the reaction of the vaginal secretion of the female at coitus (alkaline—male, and acid—female offspring). Omnadin acts by inducing a leucocytosis and repeated doses are said to be mere waste, as the initial dose accounts for the entire response.

The reading of this book brings home all too clearly the deplorable lack of facilities for post-graduate instruction in this country and emphasises the truth of certain remarks made by the writer of the editorial in the *Veterinary Record* of November 28th of this year.

J. T. E.

"Remedia Veterinaria 'Bayer.'"

Under the name "Remedia Veterinaria," Bayer Products, Ltd., have just issued a handy reference booklet containing, in a concise tabular form, information concerning the properties, indications and administration of the principal "Bayer" veterinary preparations, chemical and biological. The booklet, which comprises 36 pages, is on similar lines to the well-known compendium "Materia Medica" issued by the same firm to the medical profession. "Remedia Veterinaria" will no doubt prove of good service to the veterinary profession, especially as its value is enhanced by the inclusion of a detailed therapeutic index, and a number of tables relating to such important physiological factors in practice as duration of œstrum, periods of gestation and suckling, and the "clinical trinity"—pulse, temperature and respiration.

The subject-matter of the booklet is carefully arranged for handy reference, and the style of production is neat and effective.

"Veterinary Obstetrics" (W. L. Williams). *Correction.*—In the review of "Veterinary Obstetrics" in our issue of December 12th, the word "parted" line 11, page 1257, should read "fasted." The importance of the correction lies in the fact that in the author's method of procedure to prevent scours the calf is separated from its dam entirely after 12 hours. This is followed by a 12 hours' fast, after which it is fed as described in the notice. The notice as it reads at present suggests that the calf is only separated from the dam for 12 hours.—Ed. *V.R.*

"Osteopathic Physician and Surgeon."

Mr. H. C. A. Bingley, the Marylebone magistrate, has decided that an osteopath who describes himself as an "osteopathic physician and surgeon," as distinct from a physician and surgeon, does not commit an offence against the Medical Act, 1858. The decision was given by the magistrate when he dismissed a summons by the Medical Defence Union against Professor A. E. Shakesby, bonesetter and osteopath, of Dorset-square, N.W., for "wilfully and falsely using the titles physician and surgeon," in contravention of the Medical Act.

The Magistrate held that Professor Shakesby had not brought himself within the Act as he had described himself, not as a physician and surgeon, but as an "osteopathic physician and surgeon," which description only amplified his profession of bonesetter. He refused to grant the professor costs, but consented to a request of counsel for the Medical Defence Union to state a case for a higher Court.—*The Times.*

A Famous Sea-Lion.

"Bill," the famous sea-lion at the Zoo, has died of old age. He was a native of California and was presented to the Zoo by the New York Zoological Society in 1919. For years he had been one of the biggest favourites at Regent's Park. "Bill" weighed nearly 4 cwt. and ate between 70 lb. and 100 lb. of fish every week. He could perform the most amazing acrobatics when the keeper came to feed him. His popular "turn" was to catch in mid-air a fish while he was diving from a rock into the water. "Bill" was considered the noisiest animal in the Zoo, excelling the lions, elephants and hyenas.

Abstracts.

[**The Composition of Mare's Milk.** Linton, R. G. *J. Agric. Sc.* (1931). xxi. 669-687.]

One hundred and forty-two samples of milk from mares have been analysed. The usual methods were followed in the protein, total solids and ash determinations; the fat was estimated by the Werner-Schmid and the Gerber methods, but the lactose was calculated by difference as it was "found impracticable to estimate the sugar directly." The reason for this difficulty is not stated. The average composition of mare's milk is T.S. 10·96 per cent., protein 2·69 per cent., fat 1·59 per cent., sugar 6·14 per cent. and ash 0·51 per cent. Milks from several breeds were examined, although numbers were small with ponies and hunters.

No appreciable variation in the constituents of the milk is notable in different breeds, except in regard to the mineral matter. The ash content increases with increase in weight of the breed. The colostrum of mares has the same characteristics as that of cows. The occurrence of œstrum in the mare often causes nutritional disturbance in the sucking foal. Other disturbances appear to be caused in the foal by milks with a high percentage of fat or those in which the lactose content is very low. Milk poor in fat or with a slight excess of sugar does not seem to cause trouble in the foal. These variations are discussed fully. The milk of aged mares is of good quality, with a tendency towards richness.

W. R. W.

[**Hypertrophy of the Prostate and Prostatectomy in the Dog.** Lamy, M., *Recueil de Méd. Vét. de l'Ecole d'Alfort*, cvii, 6, pp. 343-350.]

In hypertrophy of the prostate in the dog the two lateral lobes of the organ become enlarged and press the rectum against the sacrum, producing more or less occlusion of the bowel. This is followed by retention of urine due to pressure on the urethra. Clinically and anatomically the condition differs from that in man. The author elaborates a new technique for prostatectomy and illustrates the steps with diagrams.

The operation is carried out under a general anæsthetic and no special instruments are necessary. The dog is put in the dorsal position and prepubic laparotomy performed in the usual manner. The index finger is introduced into the abdomen, passed back from the bladder to the prostate at the entrance to the pelvis, then pushed between the prostate and the rectum. The finger is then bent and a solid pull is got on the gland which, by sustained traction, can be brought outside the laparotomy wound. Several strokes with a sound free it from its bed of fat and a slightly curved metallic sound is passed through the peritoneal ligaments under the gland and at right angles to the wound, thus fixing it in position. A longitudinal medial incision is made in the capsule and the lobes dissected out, care being taken not to injure the urethra into which a gum elastic catheter should be passed at the beginning of the operation. After swabbing the cavity, and controlling hæmorrhage, the two edges of the capsule are brought together and sutured

N.V.M.A. Divisional Reports.

West of Scotland Division.*

Meeting at Glasgow.

A meeting of the West of Scotland Division was held in the Veterinary College, Glasgow, on September 30th, 1931. Mr. Peter Meikle, President of the Division, occupied the chair. There were present, in addition, Messrs. David Brown, W. M. Ferguson, James Macfarlane, Maj r J. G. McGregor, Messrs. R. Renfrew, A. H. Robb, Professor William Robb, Messrs. A. Sillars, J. F. Taylor, A. Thomson, Professor G. W. Weir, Messrs. P. Wilson and D. Campbell (Hon. Secretary).

The minutes of the previous meeting, as published in the *Veterinary Record* of September 12th, 1931, were adopted as read.

Nominations.—Messrs. A. H. Robb (Glasgow) and A. Sillars (Narbert) were nominated for membership of the Division.

CORRESPONDENCE.

The following correspondence was read by the Secretary :—

(*a*) A letter from the General Secretary, N.V.M.A., dated April 16th, 1931, concerning complaints that members of certain Divisions of the N.V.M.A. are displaying on their notepaper or account forms letters indicating their membership of the Society, in addition to the letters M.R.C.V.S., and asking for co-operation in obtaining a discontinuance of this undesirable practice.

(*b*) A letter from the General Secretary, N.V.M.A., dated August 18th, 1931, covering a memorandum from the Council of the Association on schemes for providing free treatment for sick animals of the poor.

It was decided that a special meeting should be held to consider this matter.

(*c*) Correspondence between Mr. James F. Taylor, the Secretary, and others concerning an alleged contravention of Section 3 (I) of the Milk and Dairies (Amendment) Act, 1922.

The Secretary was instructed that this correspondence should be incorporated in full in the minutes of the meeting.

This correspondence was as follows :—

(1) From Mr. James F. Taylor, of Rutherglen, dated May 18th, 1931, addressed to the Hon. Secretary, in the following terms :—" I herewith enclose a copy of a notice received by a client from the Medical Officer of Health, Lanarkshire. I also enclose two specimens of the offending discs.

" Some time ago they served a similar notice on another client, under exactly similar circumstances. I advised *him*, in the cause of peace, just to apply for a certified licence. My weakness in that case has evidently decided the Medical Officer of Health to intimidate more of my clients.

" Mr. ——— herd has been constantly submitted to the tuberculin test by me, at first at three months intervals and latterly half-yearly. He is a man who loyally supports his veterinary surgeon and it is very much against his wish that this work should pass. Milk is retailed.

" I had hoped that the Tuberculosis Eradication Scheme would have been matured before now and this constant loss of remunerative work would have ceased.

" Perhaps you would be good enough to lay this case before your Council and see what steps might be taken to protect me, as a member of the Division and N.V.M.A., irrespective of any action which my client may take. This is a matter of defence which affects us.

" The N.V.M.A. have been very active in the rights of members who apply for public appointments; surely they will show an equal energy in defence of a member engaged in private practice. You will realise that any steps taken as a body will be more effective than individual effort.

" With regard to the disc, I consider a man has every right to inform his customers that his herd has passed the tuberculin test and it is no infringement of the Milk Special Designations Order."

. . . . . .

The enclosure to which Mr. Taylor referred was as follows :—

COUNTY COUNCIL OF THE COUNTY OF LANARK.

County Public Health Department,
Beckford Street,
Hamilton.
May 14th, 1931.

" Dear Sir,

" *Milk and Dairies (Amendment) Act*, 1922.

" It has been reported to me by the Food and Drugs Inspector that, on demand for a bottle of tuberculin tested milk, you sold to him a half-pint bottle stoppered with a disc, on which was printed the following : ' James ———Milk from cows which have passed the tuberculin test. Please rinse bottle and return.'

" As you have no licence for the sale of Grade A (Tuberculin Tested) Milk, I would draw your attention to the fact that this is a contravention of Section 3 (1) of the Milk and Dairies (Amendment) Act, 1922, as you are not entitled to use any description or designation including or resembling graded milk. You might please, therefore, discontinue using the words ' Milk from cows which have passed the tuberculin test ' on your discs, or advertising your milk as such."

" I am,
" Yours faithfully,
" (*Signed.*) J. HUME PATTERSON."

. . . . . .

(2) From the Hon. Secretary of the West of Scotland Division, dated May 28th, 1931, addressed to the Secretary to the Department of Health for Scotland, stating : "At a meeting of the above Division held yesterday I was instructed to ask you the following question :—

" In the case of a milk producer who has no licence for the sale of milk under any of the special designations mentioned in the Milk (Special Designations) Order, but who, nevertheless, has his cows tested with tuberculin twice a year by his general veterinary practitioner and immediately removes all reactors from his herd, would it be a contravention of Section 3 (1) of the Milk and Dairies (Amendment) Act, 1922, if the producer, in retailing the milk from these cows, stoppered the bottles with discs bearing the words ' Milk from cows which have passed the tuberculin test? '

*Received for publication November 27th.

with fine silk. Should the flaps be too much enlarged part may be cut off before suturing. The operation is then completed by returning the parts to the abdomen and finishing as in an ordinary laparotomy. The author has operated successfully by this method in seven cases and awaits evidence as to its therapeutic value.

J. K. B.

"I enclose with this a specimen of a disc such as my Division have in mind."

. . . . . .

(3) From the Secretary to the Department of Health for Scotland, dated June 18th, addressed to the Hon. Secretary of the West of Scotland Division, in reply:—

"*Milk and Dairies (Amendment) Act*, 1922.

"With reference to your letter of 1st instant enquiring whether the action of a producer who labelled his milk bottles with the words 'milk from cows which have passed the tuberculin test,' but who did not hold a graded milk licence, would constitute a contravention of Section 3 (1) of the above-named Act, I am directed to state that the question is not one for the Department to determine but is one for decision by the Courts."

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(4) From the Hon. Secretary of the West of Scotland Division, dated June 29th, 1931, addressed to Mr. James F. Taylor, in the following terms:—

"Your letter to me of May 18th was considered at a meeting of the Committee of the above Division held on May 27th. The Committee instructed me to write to the Scottish Department of Health asking for a ruling on the matter raised in your letter. I enclose with this a copy of my letter, and the Department's reply.

"At a meeting of the Committee held to-day the matter was further discussed in the light of the Department's letter. The Committee are of the opinion that the action of the Medical Officer of Health, Lanarkshire, is unwarranted, and likely to discourage tuberculin testing. It appears to the Committee that your client has several alternative courses which he might follow:—

"1.—Submit and withdraw the offending discs.

"2.—Apply for a graded licence.

"3.—Use a description which would bear still less resemblance to the words of any official grade (*e.g.*, all our cows have passed the tuberculin test (applied by our private veterinary practitioner (?))' or 'produce of cows which have passed the tuberculin test.'

"4.—Persist in using the discs, and defend any action which may be brought. If your client is a member of any trade organisation he might obtain support from them.

"5.—Approach privately any members of the Public Health Committee of the County Council who might raise the question and endeavour to prevent any prosecution being instituted on such questionable grounds.

"Without knowing something of your client's position and inclinations the Committee are unable to advise more definitely. If there is anything further you would wish me to do I shall be glad to hear from you."

(5) From Mr. Taylor, dated September 24th, 1931, replying as follows to the foregoing communication:—"Many thanks for your letter of June 29th. I am pleased your Committee has gone so fully into the matter.

"I have consulted my client and we feel that, owing to the fact that he is engaged in the retail milk trade, it would not be judicious to run counter to the Local Authority. He has therefore applied for a Certified Licence.

"This does not, however, do away with the injustice to a veterinary surgeon engaged in private practice."

Cow Warranty.—The Hon. Secretary then recalled that at the previous meeting, held on April 8th, 1931, following the discussion of Major McGregor's paper on "The Warranty of Cows Sold in the Markets in the South and West of Scotland," the Divisional Committee was instructed to go into this question and formulate a report on it. The Committee had prepared a series of recommendations on the matter, which were read to the meeting by the Secretary. In view of the importance of the subject, the Secretary was directed to send a copy of the Committee's recommendations to every member of the Division so that they could be fully discussed at a later meeting.

Paper.—The President then invited Professor George W. Weir to read his paper on "Some Conditions met with in Racing Greyhounds."

[Professor Weir's paper, together with a report of the discussion which ensued, are reproduced at the commencement of this issue of the *Record*.—Ed.]

The meeting concluded with votes of thanks to Professor Weir and the Chairman.

Donald Campbell, *Hon. Secretary.*

Midland Counties V.M.A.*

Meeting at Birmingham.

The quarterly meeting of the Midland Counties Division, N.V.M.A., was held at the Grand Hotel, Birmingham, on Friday, November 13th. The President, Mr. J. W. Conchie, of Kidderminster, occupied the chair, and the following members were also present: — Messrs. F. Chambers, T. D. Martin, E. Brayley Reynolds, G. V. Tyerman, W. F. Aston, W. E. Ison, P. M. Evershed, R. L. Phillips, H. B. Hiles, R. H. H. Over, J. L. Cormack, H. S. Reynolds, A. B. Forsyth, L. C. Tipper, J. Robertson, senr., M. L. Dartnall, C. Renfrew, H. W. Steele-Bodger, W. H. Brooke and the Honorary Secretary (Mr. H. W. Dawes). The visitors were Lieut.-Colonel P. J. Simpson (President of the National Veterinary Medical Association) and Captain J. R. Rider (representing the Organising Committee of the N.V.M.A.).

Apologies for unavoidable absence were read from Sir Gilbert Barling, Professor Macqueen, Professor Hobday, Messrs. T. J. Brain, E. Hall, H. Burrows, M. Tailby, J. Hutchinson, J. Martin, W. J. Dale, R. Lake, H. S. Caldwell, F. L. Gooch, G. Eaton, J. J. Burchnall, E. Ringer, R. L. Green, B. Secker, J. Cane, D. Maguire, W. W. Grasby, J. R. Carless, A. Renfrew, E. Franklin, D. Forwell, E. T. Pearce, E. Wilkinson, G. F. Banham, W. Tart, J. L. Brain, W. Gascoyne, J. M. Whyte, J. C. Deville, Trevor Spencer, O. V. Gunning, A. K. Miles, J. Clifford, C. S. Hunting, R. Hughes, R. Clunes and H. Tudor Hughes.

Election to Membership.—On the motion of the President, seconded by Mr. Steele-Bodger, Mr. K. D. Downham, of the Harper Adams College, Newport, Salop (duly nominated at the previous meeting), was now elected a member of the Division.

Resignation.—A letter was read from Mr. J. O. Powley, a past president of the Division, tendering his resignation, on the ground that he no longer resided within the area. Mr. Powley's resignation was accepted with regret, and the Hon. Secretary was instructed to write thanking him for all he had done for the Division, and assuring him of a hearty welcome should he ever be able to come among them as a visitor.

Inter-affiliation of Members of Divisions.—Mr. Over suggested that some arrangement might be made for an inter-affiliation of members of the various veterinary societies. They were always glad to see visitors, of course, but a man might like to feel that he was attending as a right rather than as a privilege.

*Received for publication December 2nd.

Mr. Cormack and others favoured the idea, and it was resolved that it be considered at a future meeting.

Johne's Disease.—The Hon. Secretary read a letter from the Secretary of the National Veterinary Medical Association, acknowledging a copy of a resolution passed by this Division in favour of Johne's disease being made compulsorily notifiable; also stating that the Council of "The National," recognising the importance of the question, had agreed to submit the resolution to its other Divisions for an expression of their opinion.

Annual Meeting.—On the recommendation of the Council of the Division, it was decided to hold the Annual Meeting and Dinner at the Grand Hotel, Birmingham, in February, as usual, the arrangements being left to a small sub-committee, as before.

Treatment of Sick Animals of Poor Persons.—The meeting then went into committee to consider the memorandum of the N.V.M.A. on the provision of free treatment for the sick animals of poor persons.

The President of the N.V.M.A. (Colonel Simpson) opened the discussion, followed by Captain Rider, as Chairman of the Organising Committee, and at the close of the meeting the hearty thanks of the members were accorded them for their kindness in attending. The Council of the Division are meeting at a later date to pursue the matter and collect further information.

H. W. Dawes, *Hon. Secretary.*

Veterinary Science and the Horse.

A large number of people listened with appreciative interest to a lecture which Professor F. T. G. Hobday delivered at the Royal Veterinary College last week, the proceeds being devoted to the rebuilding fund.

Professor Hobday chose for his subject "What Veterinary Science does, and has done, for the Horse."

He claimed that the progress of veterinary science has been very great during recent years. Some diseases of the horse, which caused great suffering to the animals, as well as serious losses to the owners of large studs, are non-existent in Great Britain. So long as there is an efficient veterinary department to advise the Ministry of Agriculture, Professor Hobday maintained that our insular position will enable our quarantine precautions to prevent the re-entrance of these diseases into the studs of this country.

It is the proud boast of the Veterinary Department of the War Office that, although over 100,000 horses were sold to civilians after the war, not a single case of glanders slipped past them. Great Britain can assert that she is entirely free from this terrible scourge.

Not only in the case of notifiable diseases were the work and advice of the veterinary surgeon appreciated, but also in the everyday cases of illness and accident with which all who keep horses become familiar.

Professor Hobday related how colic had been practically stamped out, an immunity due to the practical application of the advice which veterinary observers gave that all corn, especially foreign corn which had travelled long distances by ships, should be scientifically treated to ensure the removal of bits of metal and dust before being given for consumption.

Although it took years of persistent advocacy that it was better for a horse to be watered before feeding, the practice was now universally adopted, and the effects appreciated by those who acted upon the advice, which was the outcome of veterinary anatomical knowledge.

Veterinary Surgeons (Irish Free State Agreement) Bill.

The text of the Veterinary Surgeons (Irish Free State Agreement) Bill, which was given a first reading in the British House of Lords on Wednesday, December 2nd, and a second reading on Wednesday, December 9th, was published on December 3rd.

The Bill is described as "An Act to confirm, and give effect to a certain agreement made between His Majesty's Government in the United Kingdom and His Majesty's Government in the Irish Free State with respect to the registration and control of veterinary surgeons."

The Bill is of three clauses, with a lengthy schedule.

The Bill provides that both Governments shall introduce such legislation as may be necessary to give statutory effect to the agreement.

The agreement has been confirmed by the Irish Free State Parliament in the Veterinary Surgeons Act, 1931, and the present Bill before the House of Lords will complete the legislation necessary to make the agreement effective.

Free State Council.

The third clause of the Bill provides for the establishment by legislation of the Oireachtas of an Irish Free State Veterinary Council for the purpose of controlling and registering veterinary surgeons in the Free State. From the date of its establishment this Council must always include four members, who will be eligible to represent the Irish Free State on the Council of the Royal College of Veterinary Surgeons. A supplemental charter or legislation will fix the number of members of the Royal College of Veterinary Surgeons at thirty-six, of whom four will be on the Irish Free State Veterinary Register, and resident in the Free State.

These four members will be elected in a manner prescribed by the Oireachtas by the votes only of veterinary surgeons registered and resident in the Free State. The first representatives so elected will be arranged in order of seniority according to the number of votes cast for them. After taking office at the first convenient annual general meeting of the Royal College of Veterinary Surgeons the first in seniority of the Irish Free State representatives will retain office, subject to disqualification or death, until the fourth annual general meeting subsequent to his instalment. The other representatives in order of seniority will retain office until the third, second and first annual general meeting, respectively, following their acceptance to office. Representatives elected or co-opted to fill vacancies will serve the unexpired term of office of the representative replaced.

Cessation of membership of the Irish Free State Council or the Royal College of Veterinary Surgeons, or discontinuance of residence in the Free State, will disqualify from representation of the Free State. Legislation of the Oireachtas will provide that the term of office as a Free State representative on the General Council coincides with the term of office on the Irish Free State Council, except that "for reasons of practical convenience an interval not exceeding seven days may occur between the respective dates on which such terms of office respectively commence, and also between the respective dates on which such terms of office respectively expire." For

the purposes of legislation this period of grace will, however, be ignored.

Registration.

At the time when the Irish Free State register is established registration will be obtainable by veterinary surgeons complying with the requirements, without the payment of any fee other than any annual fee that may be due from members.

The schedule deals at length with disqualification from registration and causes for removal from the register. In the main these may be summarised as " unprofessional conduct " and conviction by the civil power.

Provision is made for the investigation by a committee of the Irish Free State Veterinary Council of cases of professional misconduct. In the case of an offending member who is registered in both the General and the Free State registers, where the alleged misconduct has either started or been continued in the Free State, the investigating committee will consist of three members of the Irish Free State Veterinary Council, of whom at least one must be a member of the Royal College of Veterinary Surgeons, and two members of the Council of the Royal College of Veterinary Surgeons, appointed by that Council.

Provision is made for a member to appeal against the removal of his name from the register, as well as for application to have his name restored thereto. The legislation of the Oireachtas may provide that an appeal from a decision of the Irish Free State Veterinary Council, removing from the Irish Free State veterinary register the name of any person registered therein or refusing to restore thereto the name of any person removed therefrom, shall be to the High Court of the Irish Free State and to no other court or tribunal.

Examinations.

Colleges or institutions in the Irish Free State affiliated to the Royal College of Veterinary Surgeons will be able, on application, to have the principal teacher in a subject, or his deputy, appointed as an internal examiner at examinations held in the Free State by the Council of the Royal College of Veterinary Surgeons. At these examinations in the Free State both Councils will be represented by delegates appointed by their respective Councils for the purpose of observing and reporting upon the conduct of the examinations.

The agreement concludes :—

" His Majesty's Government in the United Kingdom of Great Britain and Northern Ireland and His Majesty's Government in the Irish Free State shall, as soon as possible, introduce into their respective Parliaments such legislation as may be necessary to give statutory effect to this agreement, and this agreement shall not take effect until such legislation in both such Parliaments shall have been passed into law."

The agreement is signed on behalf of Great Britain and Northern Ireland by Mr. J. H. Thomas, Secretary of State for Dominion Affairs, and by Mr. P. McGilligan, Free State Minister for External Affairs.—*Irish Times.*

Meat prices have sunk to such unprecedented low levels in Hungary that certain farmers in the county of Vas are distributing beef as a free gift among the poorer inhabitants. The farmers find that the sale of the hides fetches approximately as much as the sale of live cattle.—*Reuter.*

In Parliament.

The following questions and answers have been recorded in the House of Commons recently :—

Royal Veterinary College.

Lieut.-Colonel Fremantle asked the Minister of Agriculture if any decision has been made regarding the proposed grant for the rebuilding of the Royal Veterinary College as essential for the existence of veterinary training and research; and if he is aware that it was largely on the prospect of a Government grant that the appeal of the College for the support of private individuals was made?

Sir J. Gilmour : I am unable for the present to add anything to the statement regarding this grant made on page 7 of the White Paper on Reductions in National Expenditure. I am aware of the circumstance mentioned in the latter part of the question.

Lieut.-Colonel Fremantle : Does my right hon. Friend realise that if the grant is stopped it will stop the research which is the basis of economy of a service which needs it very seriously?

Sir J. Gilmour : I am aware of the necessity for economy, and I entertain hopes that some progress may be made.

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Veterinary Medical Research.

Lieut.-Colonel Fremantle asked the Minister of Agriculture whether the preparation of a scheme for the development and co-ordination of veterinary medical research has been completed, and when it is proposed that the scheme shall be put into operation?

Sir J. Gilmour : My Department has formulated proposals for the purpose stated, which are now under discussion with the Agricultural Research Council; but I feel I must make it quite clear that any scheme finally settled can only be put into operation as and when financial circumstances permit.

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Foot-and-mouth Disease.

Mr. Hurd asked the Minister of Agriculture whether, to avert the recurrence of foot-and-mouth disease through the importation of vegetables from Holland, he will advise the Dutch Government that such vegetables must not be exported to this country from areas affected by the disease?

Sir J. Gilmour : On the evidence available I am not prepared to adopt the suggestion of my hon. Friend.

Mr. Hurd asked the Minister of Agriculture what was the cost to the Exchequer of the outbreaks of foot-and-mouth disease in England and Scotland, which are now attributed to the importation into County Down of cauliflowers from Holland?

Sir J. Gilmour : The cases of foot-and-mouth disease in England and Scotland which were attributed to the Northern Ireland outbreak cost the Exchequer £91,210.

Mr. Hurd : In view of the necessity for economy, does not the right hon. Gentleman think that it would be well to save that money?

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Animals, Experiments.

Sir F. Sanderson asked the Home Secretary whether he has granted a licence under the Cruelty to Animals Act, 39 and 40 Vic., to any experimenter in this country to conduct experiments upon animals with the Calmette or B C G vaccine?

Sir H. Samuel : Any licence accompanied by certificate A, with some exceptions, would permit experiments of this character. I understand that some research work on the subject has been done in this country. I will send the hon. Member references to some recent publications.

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Imported Milk and Butter.

Mr. Glossop asked the Minister of Health whether he is aware that under the existing Regulations governing the importation of foreign liquid milk such milk may

contain *Bacillus coli*; and whether, in the interest of public health, he will take the necessary steps to have the Regulations amended?

Sir H. Young: The public Health (Imported Milk) Regulations do not impose any conditions as to *Bacillus coli* in imported milk, but the Regulations require that imported milk shall conform to a strict bacteriological standard of purity which is not required in the case of milk produced in this country, other than graded milks. I do not think that it is necessary to amend the Regulations as suggested.

Mr. Glossop: Is the Minister aware that, since these coli bacilli can only come from the intestines of foreign cows, they are luxuries which we can ill afford to import at the present time?

Major-General Sir Alfred Knox asked the Minister of Health if his attention had been drawn to an article in the official Russian newspaper "Pravda" of July 10th regarding the unhygienic conditions of milk production in the large Soviet farm Molochnoye; and whether, in view of the outbreak of disease at Yeovil last week which the doctors attributed to contaminated butter, he will consider the prohibition of the import of butter from the Union of Soviet Socialist Republics?

Mr. Donner asked the Minister of Health whether he is aware that the Moscow state inspection department (Gosinspekstia) has officially admitted that increasing quantities of Russian export butter are insanitary and damaging to health; and, in view of this, what steps he is prepared to take to prevent the importation into this country of Russian butter?

Sir H. Young: My attention has been called to reports of the statements in question. I am not aware of any outbreak of illness at Yeovil attributed to the consumption of butter. I have received information of several cases of illness in a neighbouring district, in connection with which a number of samples of butter were examined, but these were all found to be free from microbic contamination. Russian butter, with other foods, is subject to examination at the ports, and there is no evidence at present before me on which I should be justified in taking any steps to prohibit its importation.

Sir A. Knox: Is there not evidence in this official newspaper that this butter is produced under the most unhygienic conditions in Russia; and why should we impose rules and regulations on our own farmers if we are not prepared to apply them to foreign butter?

Sir H. Young: I believe that that question was answered recently.

Sir F. Hall: Has the Minister studied the official report which indicates the filthy conditions under which some of these cattle are kept; and will he take steps to see that this butter is not imported?

Duchess of Atholl asked the Minister of Health whether he is prepared to lay down a standard of hygienic quality to which condensed and dried milk imported into this country must conform?

Sir H. Young: On the information before me I do not think it is necessary to lay down such a standard.

Lieut.-Colonel Fremantle: Is it not possible to have some system by which our consuls will be able to give some kind of report on the conditions under which these articles are prepared, as that is the only way in which their purity can be ensured?

Sir H. Young: The House will understand, in connection with this and similar matters, that the law provides the Minister of Health with power to investigate the condition of such foodstuffs on arrival, and that power is exercised in such a manner as to check the product.

Lieut.-Colonel Fremantle: Does not my right hon. Friend recognise that that does not give security?

Duchess of Atholl asked the Minister of Health if, seeing that machine-skimmed imported milk is not required to contain any standard quantity of butter fat, as in the case of home-produced milk, he will consider imposing on imported skimmed milk the same conditions as are imposed on the home product?

Sir H. Young: The Noble Lady's question may be based on a misapprehension. There is no prescribed standard of butter fat for skimmed milk whether home produced or imported. This article purports to be as nearly as possible free from butter fat, and it would accordingly be impracticable to impose such a standard.

Captain D'Arcy Hall asked the Secretary of State for Dominion Affairs whether he will, through the Empire Marketing Board, give publicity to the fact that the average butterfat contents of fresh British cream is over 50 per cent., and that of the best imported foreign tinned cream is only 25 per cent., with the result that for equivalent food value the latter is more expensive than the former at the present prices ruling for such articles?

The Under-Secretary of State for Dominion Affairs (Mr. Malcolm MacDonald): The Empire Marketing Board are always glad to take advantage of suitable opportunities for calling attention to the excellence of Home produce. If the hon. and gallant Member will send my right hon. Friend particulars of the evidence on which the statement contained in his question is based, he will be happy to consider the matter further.

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Medical Officers of Health (Reports).

Mr. Groves asked the Minister of Health whether the annual reports of medical officers of health are public documents; whether members of the public have a right to see them on demand; and whether there are any rules or regulations in existence governing this matter?

Sir H. Young: There are no regulations regarding the publication of these reports, and the question is one for the decision of the local authority concerned.

Royal Agricultural Society.

Mr. L. C. Tipper, M.R.C.V.S., in moving the adoption of the report of Council at the Annual General Meeting of the Royal Agricultural Society of England, which was held on December 9th, congratulated the society on the work it had accomplished. He referred to the visit of South African farmers to this country during last summer, and said that those visitors had had a special pleasure in visiting the Royal Show at Warwick. He believed all visitors from overseas looked on the Royal Show as the Mecca of the agricultural industry. The society had done good work with regard to veterinary research, and he hoped they would be able to give further assistance towards the rebuilding of the Royal Veterinary College, Camden Town. He hoped the time would come when they would have in London the finest veterinary college in the world.

Foot-and-mouth Infection.

Following the report of the Foot-and-Mouth Disease Research Committee, which indicated that dried milk imported from Continental countries may convey the virus of the disease to this country, it is announced that the Ministry of Agriculture contemplates arranging for a test to be carried out with the co-operation of the Netherlands Government at one of the milk factories in Holland. "This might produce convincing evidence one way or the other," says the Agricultural Correspondent of *The Times*, "but the most direct way of clearing up the question would surely be for the Foot-and-Mouth Research Committee to buy in this country supplies of dried milk produced in the most seriously affected areas of the Continent and feed this material to guinea-pigs for a period of several months. If they contracted foot-and-mouth disease the evidence would be unanswerable. Judging from the official report on the origin of the outbreak of foot-and-mouth disease in Co. Down last summer, which spread to England and Scotland with disastrous results, it seems desirable that another set of guinea-pigs should be fed upon the leaves of cauliflowers and other vegetables imported from the Continent."

Royal College of Veterinary Surgeons.

Membership Examinations, December, 1931.

List of Successful Candidates.

Dublin.

Class A:	*Class C:*
Considine, P. J.	Allen, D. J.
Farrell, J. M.	Conlon, J. B.
Sheehy, J. R.	Crean, B. F.
Taylor, Miss D.	Langley, J. A.
Class B:	*Class D:*
Finucane, M.	Boyle, J. J.
Keatinge, G. A.	Hughes, Andrew
Power, R. J.	Lambert, N. H.
	McEldowney, J. P.
	Reeves, P. A.

Glasgow.

Class A:	*Class C:*
Burrow, William	Anderson, J. R.
Carson, J. M.	Briscoe, T. P.
*Faitelson, C.	Brown, J. A.
Kelly, John	MacKinnon, John
MacGregor, Peter	MacLean, Duncan
Oliphant, Miss J. A.	Martin, William
*Thomson, R. H.	Somervail, Miss M. L.
Wardrop, William	Steel, Archibald
Class B:	*Class D:*
Mackay, K. J.	Campbell, A. D.
Macnab, Edward	Catmur, B. G.
Semple, Alex.	Doyle, Henry
Slavin, Daniel	Gibb, Adam
McGranaghan, J. A.	

*Denotes Second Class Honours.

(To be continued.)

Scientific Post-mortem Examination of Pedigree Animals.

In a letter published in *The Lancet* under the above heading, Dr. G. Lenthal Cheatle, of Harley Street, W., says :—

"In reading issues of that historical sporting paper the *Field* I have been struck by the certainty with which the pedigrees of all kinds of animals can be traced through many generations. I wonder whether the causes of death in past generations have been authoritatively and accurately recorded as the pedigrees. These records—if such be in existence—would contain a wealth of material to all those interested in the relations of heredity, eugenics, and disease. If the death certificates are untrustworthy there has been an enormous waste of information, and it is high time attention should be paid to this matter. Far be it from me to suggest that the Medical Research Council should interest itself in sporting and agricultural matters in general; but this inquiry seems to me to be one that comes within the province of a useful scientific investigation."

Hall states that purgation prior to anthelmintic medication is not invariably required. It is necessary in tapeworm infestations in order to clear away the mucus. Chenopodium and castor oil can be combined without reducing the effectiveness of either. Castor oil reduces the efficacy of carbon tetrachloride. When purgatives are given after an anthelmintic, a rapidly acting saline is generally preferable. It should not be given in concentrated solution.—*Veterinary Medicine.*

Notes and News.

The Editor will be glad to receive items of professional interest for inclusion in these columns.

Diary of Events.

Dec. 21st.—N.V.M.A. Editorial Committee Meeting at 2 Verulam Buildings, Gray's Inn, W.C.1.

Jan. 6th.—R.C.V.S. Registration Committee. Council Meeting, Victoria Veterinary Benevolent Fund.

Jan. 7th.—R.C.V.S. Examination Committee. R.C.V.S. Registration Committee; Congress Executive Committee.

Jan. 8th.—R.C.V.S. Library Committee; R.C.V.S. Finance Committee; R.C.V.S. Council Meetings.

Aug. 8th-13th, 1932.—N.V.M.A. Congress at Folkestone.

Illness of Mr. E. Alfred West.

Our readers will share the very deep regret with which we learn that Mr. E. Alfred West, F.R.C.V.S., who for reasons of health resigned last year after an extended period of devoted and able service as Hon. Treasurer to the N.V.M.A., is lying ill at his home in Exmouth, Devon. Mr. West has been attacked by bronchitis. We are relieved to hear, as we go to press, that Mr. West is progressing satisfactorily.

Ministry of Health Veterinary Appointment.

We learn, with a gratification that will be shared by the whole profession, that a veterinary appointment to the Ministry of Health has, at long last, been made—an event with the significance of which we hope to deal editorially in an early issue. The appointment to which we refer is that of Lieut.-Colonel P. J. Simpson, F.R.C.V.S. (President, N.V.M.A.), as Consulting Veterinary Surgeon to the Ministry of Health, in connection with the application of the tuberculin test.

Light Horse Breeding Grant.

We are glad to know that the light horse breeders' protests have been successful. The Council of the Hunters' Improvement and National Light Horse Breeding Society have received an intimation from the War Office that the Treasury have made a grant to be devoted and administered by that Society to provide 71 King's Premiums of £100 for Thoroughbred Stallions, to travel in England and Wales, and four Premiums for Scotland.

These Premiums will be competed for at the Annual Hunter and Thoroughbred Show at Islington, on March 1st to 3rd, 1932.

Shire Horse Society.

Mr. N. W. Smith-Carington, M.P., presided at a meeting of the Council of the Shire Horse Society held on Tuesday of last week, when final arrangements were made for the fifty-third Annual Shire Horse Show to be held at the Royal Agricultural Hall on February 23rd, 24th and 25th. The schedule of the 23 classes covering the four sections—stallions, mares, geldings and commercial horses—offering £1,800 in prize money was adopted and authorised for issue.

Amongst the Officials of the Show will be :—Judge of Appointments Classes—Major-General Sir John Moore, K.C.M.G., C.B., F.R.C.V.S.; Veterinary Surgeons—Messrs.

T. Eaton Jones, F.R.C.V.S., H. P. Standley, M.R.C.V.S., and W. K. Townson, M.R.C.V.S.

The stallion and gelding classes will be judged on the first day, mares and produce groups on the second day, followed by the champion awards in the afternoon. Thursday morning will be devoted to the auction sale, while the judging of the commercial classes will begin at two o'clock on that afternoon. The annual general meeting of members was fixed for 4.15 p.m. on February 24th at the Royal Agricultural Hall.

Importation of Pit Ponies.

At a meeting of the Council of the National Pony Society on November 27th, the Council considered a letter from the Dartmoor Pony Society as to ponies being imported from Russia, Iceland, Poland and Finland to work in the mines, and the Secretary was directed to ascertain the number of ponies that had recently been imported into this country.

[The official returns of imports classify pit ponies with horses. The chief source of supply is the Irish Free State, but "other countries" (which include the countries mentioned above) sent 1,839 horses and ponies in 1930. During the first nine months of this year these imports amounted to 1,343.]

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A movement inaugurated by the Dartmoor Pony Society, with a view to securing the imposition of a 100 per cent. tariff on foreign ponies is, it is reported, meeting with a good measure of support. It has been taken up by the National Pony Society, which is making an investigation for the purpose of ascertaining the exact number of ponies imported recently.

R.C.V.S. Obituary.

Allen, Edward James. St. John's House, St. John's, Bedford. Graduated Dublin, July 12th, 1916. Died December 11th, 1931; aged 39 years.

Baker, Edward Whitley. Glencairn, Wimborne, Dorset. Graduated London, March 28th, 1883. Died December 6th, 1931; aged 70 years.

Davidson, John. West Blandford Street, Newcastle-upon-Tyne, Northumberland. Graduated Edinburgh, May 28th, 1892. Died December 12th, 1931; aged 61 years.

Patrick, Edwin (Register III Practitioner), Ingham, Lincs. [Captain late R.A.V.C.] Died December 8th, 1931.

Smith, Michael. Mullinger, Co. Westmeath, I.F.S. Graduated Edinburgh, April 18th, 1877. Died October 25th, 1931.

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The Late Mr. Whitley Baker.

Mr. E. Whitley Baker was a highly-respected and prominent member of the profession who had practised in Wimborne and district for over 50 years. He was well known in Masonic circles and a member of the Rural District Council.

The deceased gentleman took a very active interest in the Southern Counties Veterinary Society, being a regular attendant of the meetings and a prominent speaker and essayist. From the time of his election to membership on July 16th, 1891, he was actively concerned in all matters affecting the practising veterinary surgeon and the prestige of the profession.

He was first elected President of this Society in 1898 and at the same meeting read his first essay on "Disinfection and Disinfectants" before a large gathering of members. He held the office on a number of occasions and, in addition, held the office of Treasurer from the time of his first election in 1895 until March, 1930.

In March, 1923, the affairs of the Society had reached a crisis and a special meeting was called to consider the advisability of winding up the Division. Mainly owing to his enthusiasm and determination it was decided to carry on and he was again elected President at that meeting. The Southern Counties Veterinary Society undoubtedly owes its present existence to the work and zeal of Mr. E. Whitley Baker.

He was an ardent supporter and generous contributor to the Victoria Veterinary Benevolent Fund. The Secretary of the S.C.V.S. received a note from him two days before he died expressing his deep regret at his inability to attend a meeting of the Society due to failing health and requesting him to bring to the notice of the members the collecting box for this fund, to which he referred as his "baby."

Mr. Whitley Baker's lifelong enthusiasm for the Southern Counties Veterinary Society, for the Victoria Veterinary Benevolent Fund and for the prestige of the profession was an example which all members of the profession should emulate.

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As will be seen from the foregoing appreciation, forwarded by a friend of the deceased, in the passing of Mr. Whitley Baker the Southern Counties Division, N.V.M.A., has lost one of its oldest and most consistent supporters.

Mr. Whitley Baker went to Wimborne as a young man, and was articled to Mr. Blake, a Wimborne veterinary surgeon. He subsequently took over Mr. Blake's practice, and had since become one of the foremost surgeons in the county.

"For many years," says *The Bournemouth Echo*, "he had taken an active part in public affairs at Wimborne, and had been a member of the Urban Council for almost 30 years. During that time he had been chairman several times, and was vice-chairman at the time of his death.

"Mr. Whitley Baker was for long chief officer of the Wimborne Fire Brigade, the founding of which was due to his initiative after a disastrous shop fire in East-street about 20 years ago. He was instrumental in getting a fire escape for the brigade.

"He was a Freemason, being P.M. of the St. Cuthberta Lodge, of which he was secretary for many years.

"Mr. Whitley Baker was a governor of the Wimborne Grammar School and of the Wimborne Minster.

"He attended the last meeting of the General Purposes Committee of the Council, and complained of not feeling well. For some months his health had been indifferent. He passed away peacefully in his sleep."

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The Late Mr. John Davidson.

"Mr. Davidson, who belonged originally to the North Walbottle district, was educated in Newcastle, and received his professional tuition at the Royal (Dick) Veterinary College, Edinburgh," says the *Newcastle Daily Journal*.

"An efficient member of his profession, Mr. Davidson began practising in Newcastle, but owing to poor health he ceased to take an active part in the business some months ago.

"When the Milk and Dairies Order came into force some years ago, Mr. Davidson was appointed assistant veterinary inspector for Northumberland County Council (Southern Division). He was a member of the North of England Veterinary Medical Association.

"Mr. Davidson was a popular figure in bowling circles on Tyneside, being a past president of Summerhill Club and a member of the Portland Club. He was connected with the Newcastle Rotary Club, and was a member of the Walker Lodge of Freemasons.

"At one time Mr. Davidson was the Vicar's Warden in St. John's Church, Newcastle. His wife predeceased him two years ago, and he leaves an only daughter, who is the wife of Mr. Frank Christopher."

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The Late Captain E. Patrick.

"Although taking no active part in the affairs of the village of Ingham," says the *Lincolnshire Echo*, "Captain Patrick was one of its most popular residents. His expert knowledge and his great kindness to animals made for him many friends, not only in the village, but in the surrounding district.

"At one time he managed the Caistor Branch for the late Mr. Eve, veterinary surgeon, of Louth. From there he went to Reading as assistant to Mr. Wheatley, and after a short time in London he returned to Lincolnshire

and took charge of Mr. E. Porter Smith's Sturton-by-Stow Branch until the outbreak of the Great War, when he joined the Royal Army Veterinary Corps. He was stationed for some time in Ireland, and left the Army with the rank of captain.

Captain Patrick commenced practising on his own account at Stow, moving about five years ago to Ingham.

"He leaves a widow and one son.

"Mr. Porter Smith paid a fine tribute to Mr. Patrick's work, in conversation with a representative of the *Lincolnshire Echo.*"

University of London.

Examiners.—The Senate of the University of London has appointed the following to act as Examiners for the Intermediate and Final Examinations in Veterinary Science for Internal and External Students in 1932:—

Veterinary Anatomy.—Dr. J. McCunn (R. Vet. Coll.) (Chairman); and the External Staff Examiner.

Veterinary Physiology.—Dr. W. L. Symes (R. Vet. Coll.) (Chairman); and the External Staff Examiner.

Veterinary Hygiene.—Professor G. H. Wooldridge (R. Vet. Coll.) (Chairman); and the External Staff Examiner.

Veterinary Pathology.—Dr. T. Hare (R. Vet. Coll.) (Chairman); and the External Staff Examiner.

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Conferment of Title of Professor on Mr. Twort.—The title of "Professor of Bacteriology in the University of London" has been conferred by the Senate on Mr. Frederick William Twort, L.R.C.P., M.R.C.S., F.R.S., in respect of the post held by him at the Brown Animal Sanatory Institution, of which he has been Superintendent since 1909. During the War he was Captain in the R.A.M.C. and was in charge of the Base Laboratory, Salonika, in 1916. He was elected a Fellow of the Royal Society in 1929. His published work includes the following:—"A Monograph on Johne's Disease" (Baillière, Tindall and Cox, 1913); numerous papers in *Vet. Record* (1912-13); *Vet. News* (1913; and *Vet. Jl.* (1922).

Spanish Veterinary Service.

By a decree issued May 31st, 1931, the new Spanish Republic created a bureau of animal industry to operate under the Minister of Agriculture and to be managed exclusively by veterinarians. The bureau is divided into three divisions:—education and research; hygiene and animal sanitation; and Zootechnics. Each of the three divisions, the new law provides, shall be directed by a veterinary inspector general. Other provisions concerning the veterinary service of the new nation, place a veterinarian in the national department of the interior who is charged with communicating matters of importance to the department of health and fix the status of the veterinary officers of the army.

Commenting on the achievements of the veterinarians of Spain, Professor E. Lechlainche, (*Revue générale de Médecine Vétérinaire*) director of the veterinary service of France, says, "In regard to the veterinarians of Spain, they have accomplished a reform that is crowned with glory. It testifies to their recognition by those who, having made the reform possible, have had the good fortune to enforce it. . . . To Don Gordon Ordas, now Under-Secretary of State to the Ministry of Economy, falls the new directorship. He is well prepared for the important office and we wish him a lasting success in the execution of his magnificent programme."

Parliamentary Interest in Agriculture.

"The problems of the agricultural industry have never in recent years aroused keener interest in the House of Commons than during the past month," states Monday's *Times.* "Day after day the Minister of Agriculture has had to answer pressing inquiries from members who are eager and impatient to see agriculture firmly set on the road to prosperity."

Correspondence.

Letters to the Editor should reach the Office not later than by the first post on Tuesday morning for insertion in following Saturday's issue.

All correspondence must bear the name and address of the contributor for publication.

The Editor does not hold himself responsible for the opinions of his correspondents.

The Advisability of Scheduling Johne's Disease.

To the Editor of The Veterinary Record.

Sir,—The advisability of scheduling Johne's disease has already been brought forward and approved by various veterinary societies, and after the last meeting here of the Southern Counties Veterinary Society it was suggested that I should write and point out in your columns, my views on the subject, as expressed at that meeting.

Johne's disease is undoubtedly on the increase, and particularly in this district. It is a greater menace to the farmer, in view of the contamination of pastures with the diarrhœa, than many cases of tuberculosis. The plea that, in these days of economy, the scheduling of the disease cannot be recommended, is nullified by the fact that a great deal of the testing necessary in some cases coming under the review of the Tuberculosis Order, in order to differentiate doubtful cases (*i.e.*, whether the emaciation is due to Johne, or tuberculosis) would be obviated if it was scheduled, and there is no reason why both diseases could not be dealt with under the same Order, or with a very small addition to it. In many cases the local authority has to pay £2 for testing an animal that is only worth the price of its hide—adding to the compensation payable if it reacts, and paying for nothing if it does not react.

The two diseases occur together far more frequently than one is led to suppose—at least that has been my experience from *post-mortem.*

The scheduling of the disease would greatly strengthen the hands of veterinary surgeons attending markets in ordering the removal of all emaciated or suspicious cattle. At the moment they have no power to order the removal of a cow with Johne's disease—even if in the last stages—and the cow is passed on to infect the buyer's herd. Further, when such a doubtful cow is ordered out and subsequent examination shows that it was a case of Johne's disease, the owner makes profit by it and the veterinary surgeon is chary about the next case which he encounters. The apathy of the authorities in not scheduling it, can only be possibly ascribed to the fact that the disease, so far as is known, is not transmissible to the human subject. Through the local branch of the National Farmers Union, we are endeavouring to get that body to support the profession in its claim that it should be scheduled.

I hope that the resolution passed by the Midland Counties Veterinary Society will be endorsed by every Society before which it comes. The fact that there is no reliable diagnostic test for Johne's disease should not act as a deterrent.

Yours faithfully,

J. F. D. Tutt, M.R.C.V.S.

1, St. Cross Road,
Winchester.
December 8th, 1931.

Pasteurisation.

To the Editor of The Veterinary Record.

Sir,—What is the ordinary man to believe when he reads the remarks about "Pasteurisation" at the end of the "Bovine Tuberculosis in Man" article and contrasts them with the illustrated article by Mr. J. C. Coleman, M.R.C.V.S., that recently appeared in the *Record*? If the food value of pasteurised milk remains unimpaired why give children orange juice?

I am not prejudiced, because I drink both pasteurised and non-pasteurised milk, but what is the truth?

Yours truly,

Bolton. G. Mayall, M.R.C.V.S.